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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

MARCH, 1941

Vol. 94, No. 3

Member

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Always ready when the apparatus "rolls"—does not have to be dried between alarms—it is mildew, rot and freeze proof. Light and easy to handle, it folds flat and outwears ordinary hose.

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BULLETIN No. 63-A fully describes Federal Vertical Sirens, Remote Controls, Siren Operating Switches, Push Button Switches, Fire Alarm Boxes, General Alarm Controls, Time and Test Clocks, Code Control Panels, Central Station Transmitters, Code Fire Alarm Boxes, and Punch Tape Registers.

Federal Engineers are ready to help you place a general alarm system best suited to your needs.

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Please send my copy of Federal Bulletin 63-A.

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There is one make of fire apparatus which turns in a consistently superior performance record. Time and time again this make exceeds official test requirements by impressive margins. And under the rigorous demands of day-to-day, year-in-year-out service this make sets even higher standards of stamina and rugged dependability.

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- Mack gives concentrated attention to building vital parts *in its own factories*—under a most rigorous system of manufacture and inspection. Nothing is left to chance.
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FIRE SERVICE HYDRAULICS

By Fred Shepperd, B. Sc., M. E.

A Completely New Text Book Surpassing Everything Else of Its Kind Ever Published

CONTENTS

Chap. 1 Principles of Hydraulics

Chap. 2 Suction and Drafting of Water

Chap. 3 Velocity and Discharge
including Nozzle Reaction, discharge tables for all sizes of Fire Nozzles—small to large.

Chap. 4 Friction Loss Calculations
including calculations for all sizes of hose from ¾" to 3½" and tables of friction losses for all sizes.

Chap. 5 Calculating Engine and Nozzle Pressures
including solutions of problems consisting of single lines, siamesed lines, branched lines; a new method for solving problems involving 2½" to 2" hose; also unlined linen hose from ¾" to 3½" diam.; open butt calculations; lines laid up an elevation or down an incline; standpipe problems; water tower problems; deck gun calculations; pumpers in relay; Bresnan distributor calculations; fog nozzle calculations; quick pressure calculations; foam stream calculations; dewatering siphon calculations.

Chap. 6 Fire Hydrants and Mains
including friction loss calculations; flow calculations; discharge from fire hydrants.

Chap. 7 Fire Streams
including use of nozzles; range of streams; causes of defective streams; proper placement of pipes for good street streams; water hammer, or ram; proper use of shut-off nozzles; electrical conductivity of fire streams.

Chap. 8 Sprinkler System Calculations

Chap. 9 Fire Apparatus Pumps
including descriptions of piston, rotary and centrifugal fire apparatus pumps; calculation of discharge from pumps; pump primers; parallel-series type of pump; pump horsepower calculation; pump discharge at different pressures; ratings of pumps; pump slippage; maximum pressure limitations.

Appendix: Tables Covering the Following:
Static pressures; fire streams supplied by different sized mains; contents of cylinders, cylindrical tanks, cisterns; circumferences and areas of circles; square roots; conversion tables; ranges of fire streams; friction loss in hose; discharges from nozzles.

In presenting the new "Fire Service Hydraulics", we proudly feel that Fred Shepperd, Editor of FIRE ENGINEERING, and author of such famous and widely used books as "The Fire Chief's Handbook", "Simplified Fire Department Hydraulics" and others, has contributed to the fire protection profession what is unquestionably his crowning achievement.

This new book brings thoroughly up-to-date the subject of hydraulics as it pertains to every phase of fire fighting—in simpler, more understandable, and more complete form than ever. Not only that, it embraces, as well, many important new angles that have never before been covered anywhere. For example, there are new formulas of greater accuracy for finding friction loss and nozzle and engine pressures of small fire hose layouts; methods are shown for making quick hydraulic calculations at fires without the aid of pencil and paper; friction loss in water mains and hydrants is fully covered; calculations are given for automatic sprinkler systems, as well as for Bresnan distributor, fog nozzle and dewatering siphon problems. These are only a few of the new things.

If you now have a copy of Shepperd's "Simplified Fire Department Hydraulics" (originally issued in 1928 but now out of print), you will certainly want "Fire Service Hydraulics". *It is completely different* and nearly twice as large. Every bit of the text is new and so are all of the numerous illustrations. There are several brand new formulas, originated by Mr. Shepperd, and even old ones have been simplified or revised for greater accuracy.

All in all, "Fire Service Hydraulics" is a book every progressive fire fighter from the Chief down needs and should have. It is a "must" particularly for men studying for promotion because it gives the answers to many new questions that are bound to come up in future examinations.

$3.00
per copy postpaid

Order your copy today and get one of the first off the press. If it doesn't come up to your expectations, return the book within 5 days and we'll refund your money.

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NO TIME TO WASTE

PREPARE NOW

AIR RAIDS A POSSIBILITY

The Axis powers have planes capable of carrying 1,200 incendiary bombs each and flying 7,500 miles non-stop. Such raids, while now improbable, can be carried out whenever the Axis powers see fit. Such planes could start as many as a thousand fires in one raid. There is no Fire Department in the U. S. today that could handle that many fires. Trailer Pumps are the only solution.

GASOLINE FROM THE SKY

Long range bombers, as built today, have a gasoline capacity of 2,000 gallons; many lighter planes have capacities of from 500 to 750 gallons.

This large gasoline capacity of planes constitutes a serious fire hazard to cities. One bomber carrying 2,000 gallons of gasoline crashing in a city could cause more fires than any Fire Department could handle. Trailer Pumps at strategic points are the answer.

ELIMINATION OF WASTE

The fire problem, now more than ever, is in the forefront of National Defense. It demands greater efficiency in fire fighting. We must heed the lesson of Europe, i.e., one square mile of Rotterdam was leveled in three hours and Rotterdam was built of stone. The obvious answer is Trailer Pumps, and plenty of them at strategic points.

NEED OF MEN AND APPARATUS

Most Fire Departments today are under-manned. Equipment is obsolete, most of it being 20 years old or more. Even under normal conditions this is not efficient enough to handle serious situations. Men cannot be trained nor equipment bought over-night. Prepare now—buy Trailer Pumps and train men to handle them.

UNITED STATES HAS HIGH LOSSES

In spite of the fine fire prevention work in recent years, the U. S. A. has fire losses two and three times greater than that of pre-war Europe. Fire chiefs and insurance authorities live in constant fear of impending fires, for which adequate defense must be provided. A major war is in progress and—whether we are in it or not—arson, fire and sabotage are rampant even now. What will it be if we are raided? We must have Trailer Pumps to meet the demand for protection.

LONDON PLANNED IN ADVANCE

After the first World War, London, which suffered 25 raids and had 6 serious fires, realized the need for wartime protection. London officials increased the normal equipment of some 200 pieces of apparatus to more than 2,000 pieces of apparatus, principally by the addition of Trailer Pump units attached to private autos or mounted on commercial trucks. London's solution is ours —more Trailer Pumps.

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Trailer Type Pumper
In three sizes:

500 gallons per minute Underwriters' rating with Ford engine, 85 H.P.; pump, single stage, direct connected.

600 gallons per minute Underwriters' rating with Ford Mercury engine, 95 H.P.; pump, single stage centrifugal, direct connected.

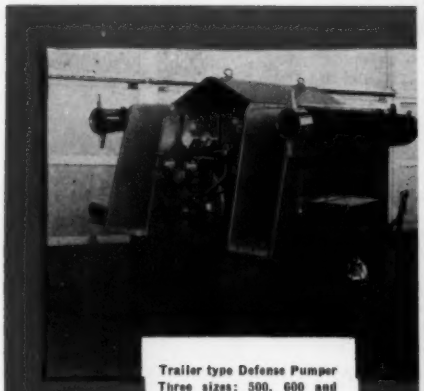
750 gallons per minute Underwriters' rating with Ford Zephyr engine, 120 H.P.; pump, single stage centrifugal, direct connected.

Motorcycle Type Pumper
Indian motorcycle, three-wheel, chain-on-shaft drive, propelled by two-cylinder engine; fire pump, 500 gallons per minute Underwriters' rating. Pump is powered by the standard Ford 85-H.P. engine.

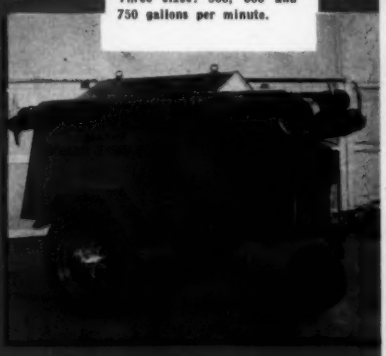
Portable Type Engine and Pump
Two sizes:

150 gallons per minute capacity. Pump is powered by four-cylinder, four-cycle, 25-H.P. engine. Pump direct connected, two-stage centrifugal. Same type and capacity unit available with rotary pump.

25 gallons per minute capacity. Pump is powered by single-cylinder, four-cycle, 3½-H.P. engine. Pump is direct-driven, rotary type.



Trailer type Defense Pumper
Three sizes: 500, 600 and 750 gallons per minute.



Motorcycle Defense Pumper
One size only: 500 gallons per minute.

MAXIM MOTOR COMPANY
MIDDLEBORO, MASS.

FIRE ENGINEERING

A Consolidation of Fire and Water Engineering, The Fire Engineer and Fire Protection

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FRED SHEPPERD
Editor
N. N. WOLPERT, *Assistant Editor*

Let Him Know

HERE'S a suggestion that will prove helpful all around.

● You know, from your regular reading of FIRE ENGINEERING, what an interesting and truly helpful publication this is for Fire Department officials.

● But you may not know, and your Water Works Superintendent may not know, that we publish an equally fine practical and authoritative magazine devoted exclusively to the needs of the water department — WATER WORKS ENGINEERING.

● As a matter of fact, until 1926 both these fields were covered in one publication known as "FIRE and WATER ENGINEERING"; but we determined that we could serve each department far more effectively by giving each its own specialized magazine, and so for the past 15 years you have each had your own paper.

● Possibly your water works officials don't all know about WATER WORKS ENGINEERING. Won't you help us both by suggesting it to them?

The Publishers

FIRE ENGINEERING

The Journal of the Fire Profession since 1877; published on the tenth of each month by Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York City, also publishers of *Water Works Engineering, Sewage Works Engineering*, etc. ¶Subscription price U.S. and Latin America, $2 a year; Canada, $2.50; Foreign, $3; Single copies, 25c. ¶Member of Audit Bureau of Circulations and Associated Business Papers, Inc. ¶Entered as second-class matter April 15, 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879. ¶Contents of this issue copyrighted, 1941, by Case-Shepperd-Mann Publishing Corp. ¶KARL M. MANN, President; I. HERBERT CASE, Vice-President and General Manager; ALFRED J. HOUGHTON, Eastern Representative; WM. H. TOPHAM, Circulation Manager; H. S. ESSEX, Production Manager. CHICAGO OFFICE: W. S. CLEVENGER, L. M. ROCHE, 6 No. Michigan Ave.; SAN FRANCISCO: CHARLES H. WOOLLEY, 444 Market Street; LOS ANGELES: AUGUST HAURIN, D. F. HARNER, 6000 Miramonte Blvd. ¶Printed in U.S.A.

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NEW SERIES 700-A

This new Series 700A is a worthy companion line to Series 500A and is designed particularly for pumper use. Information on both series mailed on request!

ALL-ALUMINUM POMPIERS SERIES 590-A

Series 590A is a new aluminum pompier ladder. The weight is only half that of a similar old style ladder. Note the rail section of rectangular tubing.

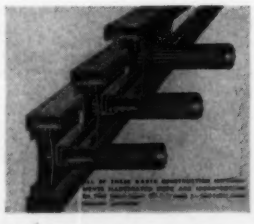
"CHAMPIONS OF SAFETY" PROTECT YOUR MEN!

Popular NEW light weight ladder designed especially for pumper use! All aluminum (Duralumin) CHANNEL construction which adds GREAT STRENGTH to its extreme light weight.

Replaces old-style solid-side wood short extension and roof ladders for pumper equipment.

It's the ladder you'll want to see and inspect—the ladder Fire Chiefs are specifying from coast to coast! Equip your pumpers with this modern ladder now! Specify DUO-Safety!

To the right is shown an illustration of a 3 section Series 525A tubular rail construction ladder. This type of ladder is ideally adaptable for service trucks where extreme strength and rigidity is required.



3 Section Construction

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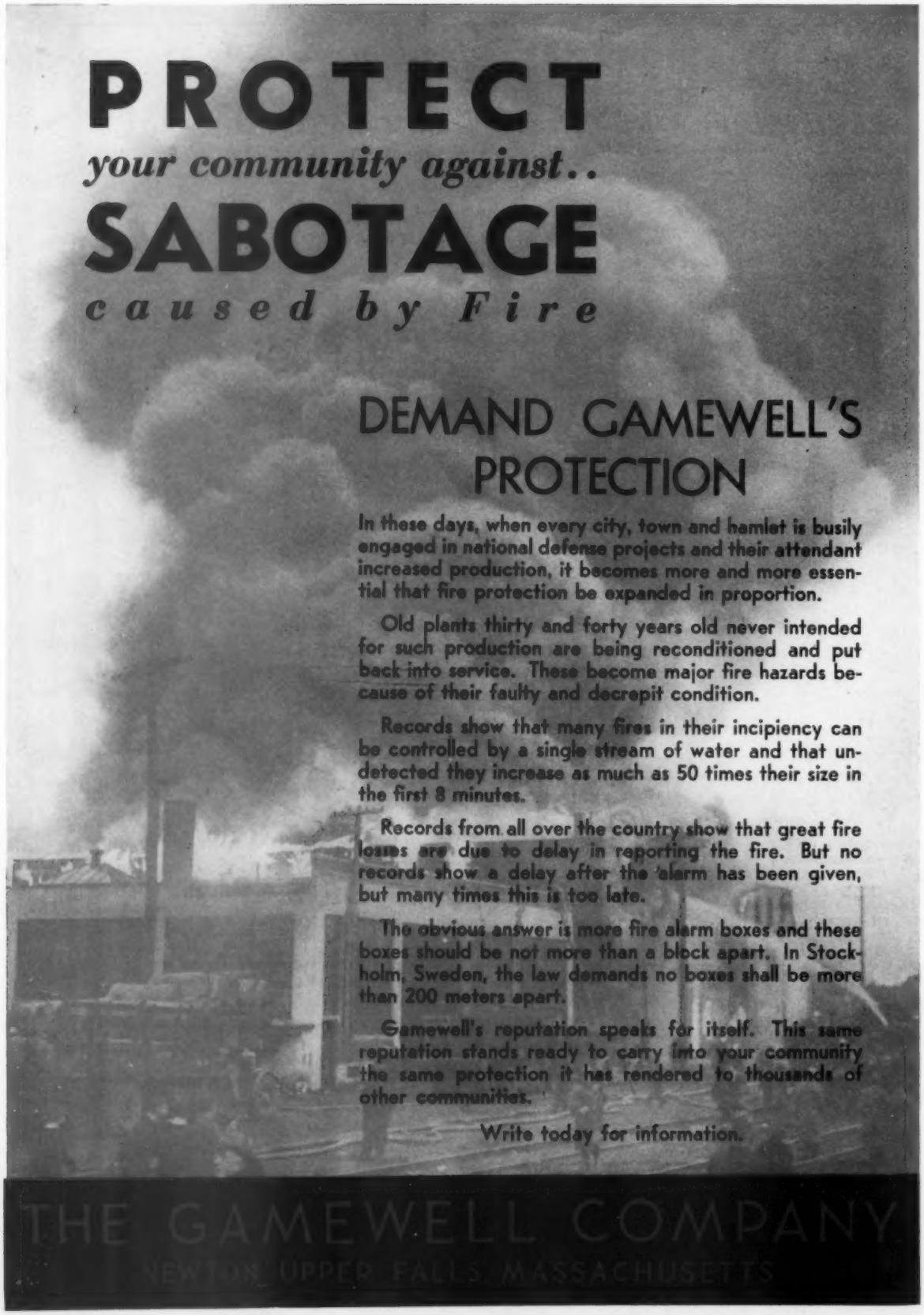
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your community against..
SABOTAGE
caused by Fire
DEMAND GAMEWELL'S PROTECTION
In these days, when every city, town and hamlet is busily engaged in national defense projects and their attendant increased production, it becomes more and more essential that fire protection be expanded in proportion.
Old plants thirty and forty years old never intended for such production are being reconditioned and put back into service. These become major fire hazards because of their faulty and decrepit condition.
Records show that many fires in their incipiency can be controlled by a single stream of water and that undetected they increase as much as 50 times their size in the first 8 minutes.
Records from all over the country show that great fire losses are due to delay in reporting the fire. But no records show a delay after the alarm has been given, but many times this is too late.
The obvious answer is more fire alarm boxes and these boxes should be not more than a block apart. In Stockholm, Sweden, the law demands no boxes shall be more than 200 meters apart.
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FIRE
ENGINEERING

MARCH, 1941 VOL. 94. NO. 3

With the Editor

Fire Apparatus Jam Threatened For over a year this journal has been urging the strengthening of fire departments by restoration of personnel and purchase of new apparatus, to be prepared for sabotage and possible incendiary air raids.

It recommended immediate purchase of fire apparatus on the prediction that if war came nearer our shores, it would be impossible for the fire apparatus industry to meet the urgent demands for new equipment placed upon it.

Well, that is just what is happening! Fire apparatus plants are crowded with orders today. Six months' delivery is the best that can be offered by some of them. And conditions will get very much worse from now on.

The Priorities Board at Washington is already barring the use of certain metals in fire apparatus manufacture, making necessary the use of substitutes and thereby slowing up production.

The skilled labor supply has practically vanished; machine tools needed in fire apparatus plants will be placed under priorities ban.

Mayor LaGuardia, of New York City, President of the U. S. Conference of Mayors, recently told that body that cities would have to spend, for each fire station in service today, $43,000 for additional equipment in order to bring the fire department to such a state of fitness that it would be capable of handling the multiplicity of fires caused by possible air attack. His estimates were based on reports of skilled observers abroad. He urged immediate action.

The situation in the fire apparatus field is beginning to appear grave. The best that a city can now do is to place orders for badly needed equipment at once, and then be patient.

More Swivel Chair Advice Mayor William E. Kane, of Woburn, Mass., spoke thus of firemen in discussing a bill to provide cabs on fire trucks:

"These glamor boy firemen—always looking for something. Pretty soon they'll want us to take them to fires in enclosed vans, with a place to sleep, and smoking jackets. In the Summer, they'll want fans to cool them."

Yes, just some more swivel-chair advice from one who has never taken a beating at a fire, and a drenching as well, and then had to ride back to the station on the top of an open fire truck in sub-zero weather.

Mayor Kane, by his very statement, proves himself unfamiliar with proper fire department administration. If he really knew the business, he would lose no time in having the fire trucks equipped with cabs. For experience of Fire Chiefs above the Mason and Dixon Line proves that, with the adoption of enclosures on apparatus for the men, time-off periods in winter, due to sickness, have been reduced as much as 50%. Such a reduction represents a real saving for the taxpayers, and means better fire protection, too.

Maybe the Mayor should be told that street railway and bus companies, as well as trucking concerns, shield their men from the weather. They must find it profitable!

Fred Sheppard

Complete Set-Up for "Extinguishing Flame" Lecture

Demonstration Lecture on

Extinguishing Flame

By HERBERT W. LANGE
Assistant Engineer, Underwriters' Laboratories

LIGHT a match, and blow it out—so. A fire has been extinguished. All of us have done that thousands of times, and yet I wonder how many have considered the phenomenon of extinguishment. To fully understand what happens when a match is blown out, it is first necessary to be familiar with combustion.

Combustion—What Is It?

Combustion is oxidation taking place at such a rapid rate as to produce luminous flame. Oxidation takes place all of the time in most materials. It is the combining of oxygen with the material in question. In the case of iron, the result of oxidation is rust or iron oxide. In an ordinary atmosphere containing about 21 per cent oxygen, rusting takes place slowly. In an atmosphere of pure oxygen, it is possible for oxidation to take place at such a rapid rate that the iron when ignited burns with incandescence, because oxidation in all things produces heat, and if it takes place rapidly enough, light is produced.

There are such curious conditions of flame that it requires some cleverness and nicety of discrimination to distinguish the kinds of combustion one from another. Today we will deal only with ordinary flames of common combustibles such as wood, textiles, etc., and of common flammable liquids, i.e., flames in the liberated flammable vapors.

Going back to the match which was extinguished, we note that the wood portion was ignited by the head, a heat generator. When the head has heated the wood sufficiently, a vapor is driven off, and flammable vapors are in a form which may oxidize rapidly. In the presence of flame, such as the burning head of the match, oxidation can be accelerated to the state of actual combustion. The flame from the burning vapors in turn generates more vapors from the wood, and flame continues until the wood is consumed or the match is extinguished.

There are several common ways of extinguishing fire. In practical importance their probable order is: cooling, smothering, separating the flame from the burning material.

In the case of the match, it was extinguished by blowing the flame away from the burning material so that it could not further heat the wood and form combustible vapors. If the match is blown out quickly, we simply separate the flame from the flammable vapors; if blown slowly, we push the flame aside to decrease the generation of flammable vapors.

Separation of Flame

Another experiment to show separation of flame can be conducted with this knife and this small can full of alcohol. I light the alcohol and very simply slice off the flame with this knife—thus.

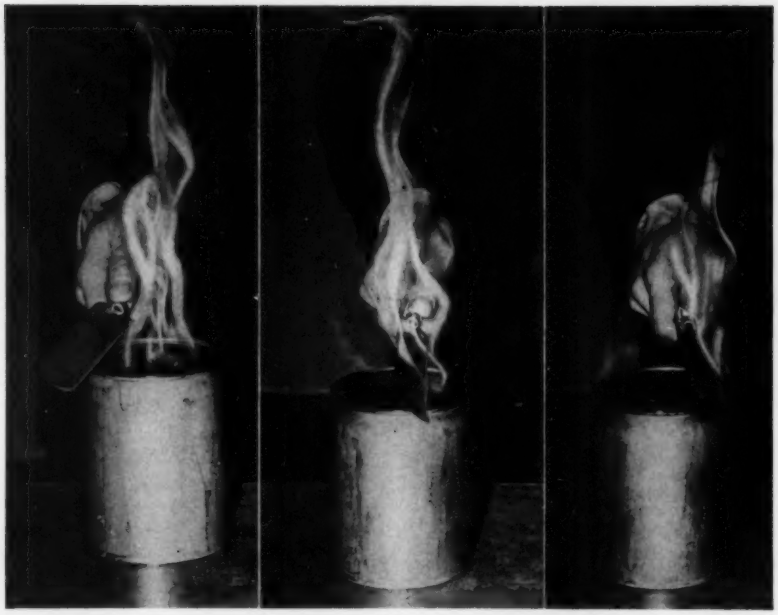
A common method of separating flame from burning material was practiced by aviators in days past and perhaps is still employed when neces-

sary. Fires frequently occurred at the carburetor while the plane was in the air, in which case the aviator would attempt to suck the flame into the engine by opening the throttle wide. If that failed the next step would be to dive and stunt in the hope of separating the flame from the carburetor, and many times that has been accomplished.

Cooling

To demonstrate extinguishment by cooling, we will employ this small can of flammable liquid which has been burning so brightly at the end of the table. The can contains paraffin, heated until it will burn. If left undisturbed, it will continue to burn until consumed, because the heat of the flames serves to keep the paraffin at a temperature at which flammable vapors are released in sufficient quantity for combustion. By placing this can of burning paraffin in this pan of water, the fire can be extinguished by external cooling. The water serves to cool the paraffin in the can faster than the flames can heat it, and you will perceive that the flames are gradually receding, and, finally, are totally suppressed.

You can see fumes or vapor still coming from the hot paraffin; perhaps you wonder why they do not continue to burn. I will attempt with this match to relight them and you will note that time and again they flash, but will not hold their fire. The liquid is at a temperature which is called the *flash point*. By allowing it to cool just a little more you will see that I cannot ignite the paraffin with a match, although it is still in liquid form. To further demonstrate these various characteristics, I will again place the can above the Bunsen burner while we take up the next experiment.

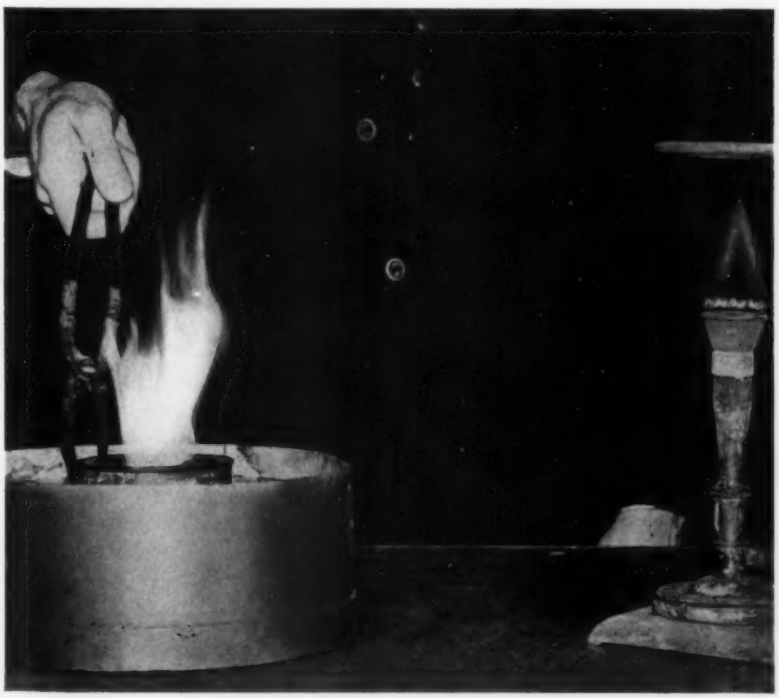


Slicing It Off with a Knife—Separating the Flame from Its Source by Mechanical Means

The Kitchen Method

In this ten-quart pail we have one quart of alcohol. Alcohol is used in these larger tests since it burns without black soot and smoke. The alcohol is ignited readily by throwing a lighted match into the pail, for at room temperature it is well above its flash point. We would have to cool it below zero before it became difficult to ignite. Perhaps we might extinguish it by external cooling as we did in the case of paraffin, but to do that we would have to cool it far below zero since it is so very volatile at ordinary temperatures.

In this experiment, however, we choose to extinguish the flames by smothering, and will use what I will call the old fashioned kitchen method used by all busy cooks when the pork chops in the frying pan catch fire. We will use a cover. By placing the cover on the pail for an instant and then removing it, you see that the flames were out of sight, but persisted within the pail, for now, with the cover removed, the fire burns as brilliantly as ever. By holding the cover on the pail just a little longer we extinguish the fire. Removing the cover, you see that there are no flames. In the latter case, we allowed sufficient time for the oxygen in the



Extinguishing by External Cooling

This is possible only with heavy oils and fats, and when the area exposed to flame radiation is small in comparison with the cooled area.

Extinguishing Flammable Liquid Fire with Water Spray. Note Separation of the Burning Vapors from the Source

Directing the Stream Into the Liquid the Wrong Way. For Correct Method See Pictures on the Next Page

pail to be consumed, and without sufficient oxygen combustion cannot take place.

Ignition Without Flame or Spark

You have noted, that while conducting the last experiment, I have been repeatedly testing the little can of wax which is being heated by the burner. You saw that it was heated past the flash point and heating was carried on beyond the point at which burning would continue. We now have it at another critical temperature known as the *apparent ignition point* or *autogenous ignition point*. You notice that when I extinguish the fire by holding a cover over it, re-ignition takes place shortly after removing the cover and without adjacent flame of any kind. I do it again—and again—and again. You ask: what trickery is this? How does fire occur without the addition of flame or spark for ignition? The answer is centered about that term autogenous ignition point. The paraffin has been heated to a point where ignition occurs automatically when the vapors come in contact with some equally hot surface such as the edge of the can. Oxidation takes place more rapidly at high temperatures than at low temperatures, generating heat in proportion to the rate of oxidation. When the autogenous ignition point is reached, flaming occurs automatically. Now again I place the can of burning paraffin in the pan of water for extinguishment while we go on with our further studies. You will notice that it will take considerably longer for extinguishment now that the paraffin has been heated more than it was in our initial trial.

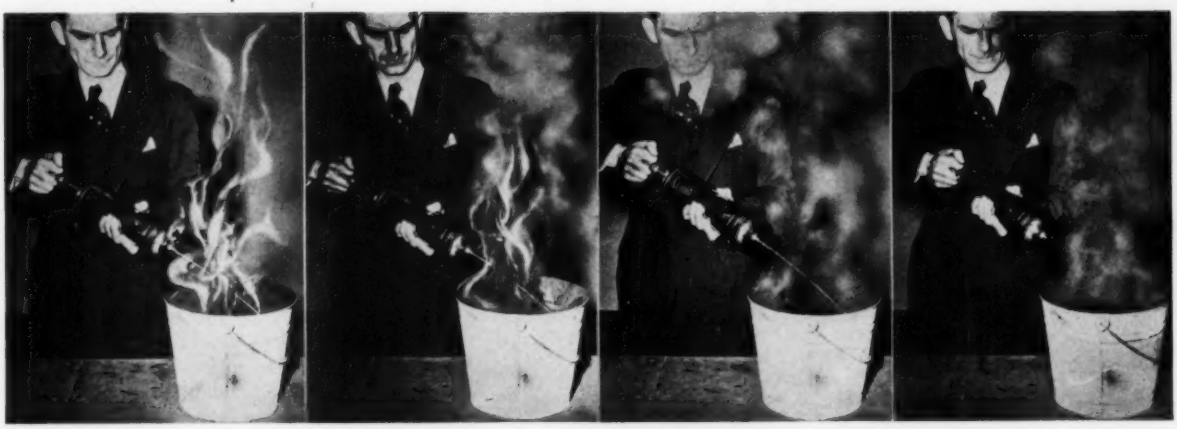
Water Plentiful and Effective

It is one of those wonderful acts of providence that the most abundant liquid in this world should also be one of the very best fire extinguishing agents. To raise the temperature of a pound of water up to and past the steam point requires the addition of over 1,000 British thermal units. In other words, when one pound of water is changed to steam it takes over 1,000 Btu away from something else. When water is used to extinguish a deep-seated fire, the burning material is cooled to the extent of the heat taken by the water to form the steam. The heat required to raise the temperature of a pound of water one degree F is only one Btu, but the change from the liquid to the steam or vapor state takes 970 Btu, thus accounting for its great cooling effect. This is what makes water primarily suitable on deep-seated wood or textile fires which require cooling of large masses of glowing embers before extinction can finally be accomplished. Under certain conditions, the performance of water as an extinguishing agent can be improved somewhat by the addition of certain fireproofing chemicals such as salts of ammonium, potassium, or calcium, but that is a separate problem with which we will not deal now.

Effect of Water Spray

This experiment will demonstrate an additional method of employing water as an extinguishing agent. I have here an ordinary spray pump used in orchards and on shrubs for another purpose, but which also serves my purpose well in that it enables me to atomize the water so that I may apply it in finely divided form. I pour one quart of alcohol into the pail, ignite it and with very little water spray extinguish the fire.

Transmission of heat from one thing to another depends in large part upon exposed area. Water in such finely divided form exposes a great



Directing the Stream Against the Inside of the Container Is the Proper Way. Note How the Stream Is Broken Up Into Readily Evaporated Droplets to Form a Dense, Fire-Smothering Gas

total area to the flames into which it is directed, robs the flames of heat, cools the liquid surface, retards release of flammable vapors and combustion ceases. There have been recent developments of nozzles to make possible the spraying or atomizing of water. These are mainly in large sizes for fire department use. It is claimed that such nozzles, while not possessing the range of fire streams, often provide more efficient application with less water damage, and with this test considered, together with the one following, we will see such a difference.

Dilution—Not Practical

Alcohol and water will mix in all proportions. I will relight the quart of alcohol in this pail and slowly pour in water. You notice that there seems to be no apparent immediate effect on the flames. As I continue, however, the flames diminish, and now that I have poured in a full gallon, the flames have finally been extinguished. The principle involved in this case is again very simple. It is a matter of diluting the mixture to a concentration at which alcohol vapors are no longer given off in sufficient quantity for combustion. This principle of dilution with water cannot be employed in the case of petroleum or other flammable liquids which float upon the water and are not soluble in it, and in general is not a practical method of extinguishing fire.

Types of Extinguishers Using Water

Hand extinguishers employing water as the main extinguishing agent, are made in a number of designs. The most common type is the soda-acid extinguisher, employing a solution of sodium bicarbonate in the main chamber which also holds a suspended acid bottle containing sulphuric acid. When the extinguisher is inverted, the acid and soda mix and react, forming carbon dioxide gas, which serves as the pressure means for discharging the solution through hose and nozzle in a continuous, easily directed stream. The main purpose of the chemicals involved is to provide pressure when wanted. They do not add a measurable fire extinguishing effect over that afforded by plain water.

Another type of extinguisher similar in appearance and in operation employs a carbon dioxide pressure cartridge which, when punctured, provides means for ejecting the water. An ordinary hand pump extinguisher is also available. Calcium chloride is employed in connection with water to form solutions for the latter type when freezing temperatures may be encountered. In such manner, the freezing point of the liquid can be depressed to as low a point as minus 50° F.

Vaporizing Liquid

With the aid of this next pail containing alcohol, we will examine the extinguishing characteristics of a liquid employing carbon tetrachloride as a base. This liquid, known as vaporizing liquid, rapidly evaporates when played upon hot surfaces and forms a heavy, fire-smothering gas. Only about 100 Btu per pound are necessary to evaporate the liquid, while over 1,000 Btu are required for each pound of water. For this reason, in comparison with water, carbon tetrachloride has little cooling effect when applied to fires involving masses of glowing embers or coals. It is therefore generally recognized as not being suitable for such service.

Employing this one-quart pump-type extinguisher, I pump the vaporizing liquid into the alcohol, and you can see that there is no apparent extinguishing effect, although of course as in the case with water and alcohol, it would be possible to obtain extinguishment by dilution. Instead, however, I will direct the stream against the inside of the pail—thus; and with a little squirt the fire is almost magically extinguished. The impinging stream splashes back over the flames in small droplets which are in a form which can be quickly evaporated. It is true that some cooling effect may here come into play, but by the difficulties I am encountering in re-igniting the alcohol you will observe that the heavy, fire-smothering gas is still hovering above the alcohol. As it again ignites, full flame is not re-established until the heavy vapors are dissipated. Vaporizing liquid type extinguishers are available in a number of designs and sizes, and are also especially suitable for use on fires involving electrical current as the liquid is an excellent dielectric or insulator.

Dry Compound

Extinguishers have recently been developed which employ a dry compound. I have here a fifteen-pound size from which the compound is forcibly ejected in dust cloud form when a carbon dioxide pressure cartridge within the extinguisher is punctured. The dust cloud of this special compound is effective in sweeping the flame from a burning surface, cooling and smothering the fire. As the extinguisher is too large for this little experiment, I will, in

Bulk Application of Sodium Bicarbonate Is Futile

When Diffused, It Has a Marked Extinguishing Effect

the case of this next pail of burning alcohol, apply the powder by hand. First, I will simply throw a large scoopful of dust into the pail. Notice that the fire was only slightly disturbed. However, in changing the method of attack by dispersing a much smaller quantity of dust (which I hold in my fingers) over the surface, the fire is suddenly quenched. To show you the difference between this compound and rock dust or cement, for example, which is equally ground, I will take a quantity of cement and with my very best efforts I can obtain no extinguishing effect.

Flames Are Unaffected by Cement or Similar Dust

Possible Catalytic Action

You may ask just what the difference is between these powders which makes one so effective and the other so ineffective. All of the answers are not known, and reference has been made to a *catalytic action*. The dry compound—the powder which was effective—is essentially sodium bicarbonate. Other things are added to keep it in powdery condition free from caking and packing. Sodium bicarbonate changes to sodium carbonate with the application of heat, and because of the heat requirements involved in such a change, a cooling action over large areas is available. During the change, carbon dioxide gas is liberated and this affords a certain smothering action. Thus cooling and smothering are used in combination, but it is difficult if not impossible to establish separately, the relative value of each.

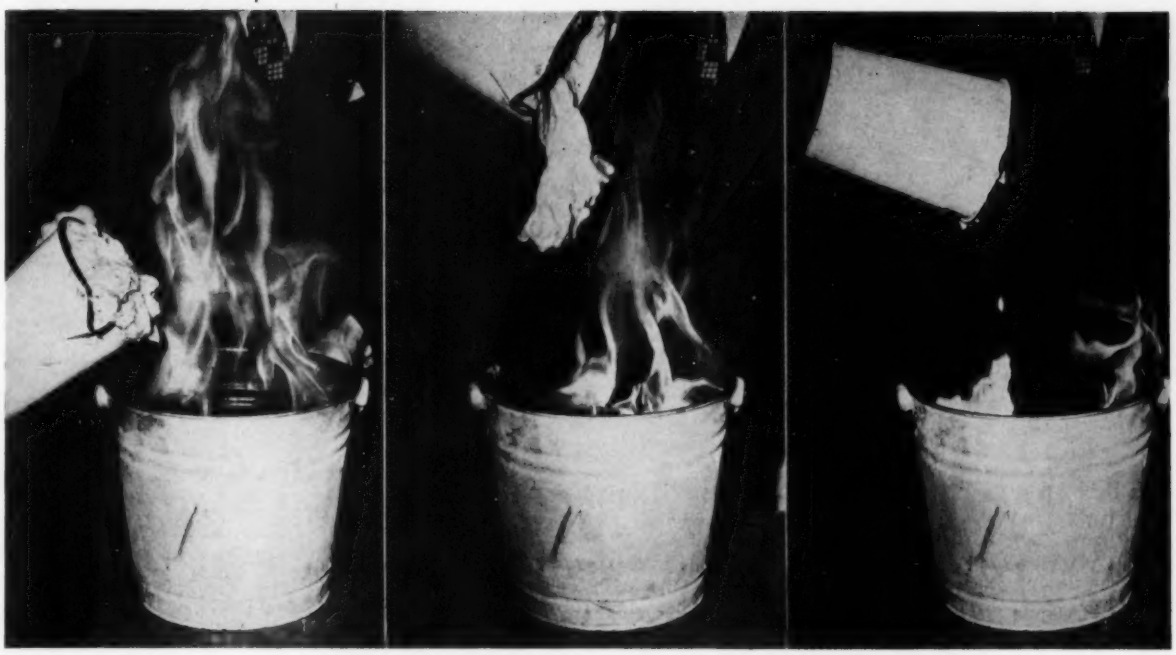
Application of any extinguishing agent in a continuous, easily directed stream is generally the most efficient method of application. For this reason most hand extinguishers are designed to give a continuous stream by means of which any headway gained in extinguishing the fire can be followed up with greatest possible effectiveness. Many quenching agents are transient in their action, and if one fails to extinguish all of the fire, reflashes over the entire area often re-establishes the fire in its original intensity.

Foam

Foam is a quenching medium which provides a smothering blanket possessing a certain permanence. This foam extinguisher of 2½-gallon size is too large for our demonstration purposes today. I will therefore discharge the device into this 25-gallon can. The extinguisher is very similar to the soda-acid device, a main difference being the addition of a foaming ingredient to the sodium bicarbonate solution. This makes a difference in performance much like the difference between drawing off beer from the spigot, and soda water from the siphon bottle. The beer has foam of a certain stability because of the malt and hops which act as a foaming ingredient, whereas the froth in soda water quickly dissipates because it consists only of water and carbon dioxide.

Now you see that I have practically filled the 25-gallon can with foam from this 2½-gallon extinguisher. The foam is firm and stable and clings

A 2½-Gallon Foam Type Extinguisher Generates Approximately Twenty Gallons of Fire-Smothering Foam



Smothering a Flammable Liquid Fire with a Fire-Smothering Foam Blanket Applied by Hand

to my hand when I hold this handful upside down. After standing fifteen minutes it will shrink only approximately ten per cent. It is not rapidly broken down by flame as shown by this handful of foam which insulates my hand from the heat of the torch.

The extinguishing action of foam is principally that of smothering as it floats or rests upon flammable surfaces. There is however, a cooling action for in this twenty gallons of foam there are 2½ gallons of water solution.

In demonstrating the smothering action of foam on this fire involving a pail holding one quart of alcohol, I am showing foam in an application in which it is not best suited. Foam readily dissolves in alcohol, acetones, etc., and is not as effective with these liquids as it is on petroleum products upon which it floats without reaction. However, by dumping this foam from a ½-gallon measure into the pail it forms a blanket and quenches the fire.

Foam streams should not be played into burning liquids for the foam then emerges covered with the blazing liquid. Foam streams should be directed against the inside of the container so that the foam drops gently on the surface of the liquid and forms a smothering blanket.

Carbon Dioxide

You have heard me mention carbon dioxide many times in this discussion, and perhaps you wonder just what effect carbon dioxide alone would have upon a fire. Carbon dioxide is a relatively inert gas which has many wonderful characteristics and uses. It is used in refrigeration, medicine, beverages, as an exterminator, and for blasting coal in mines. In its solid form it is the dry ice with which you are familiar. At normal temperature and pressure it exists in gaseous form and it is a part of the atmosphere, being liberated by combustion, fermentation and by exhalation of animals. It can be compressed and liquefied, and it is this latter characteristic which makes it adaptable to storage for fire extinguisher use.

The Foam Is Tough and Stable, and Will Even Insulate the Hand from the Heat of a Blow Torch

Carbon Dioxide Chases the Fire Away

The Smothering Is Done by the Heavy Gas Cloud

I have here a two-pound size carbon dioxide extinguisher. The storage cylinders are made in many sizes. With sixty-eight per cent filling, the pressure in the cylinder is always 850 pounds at 70° F. The pressure varies greatly with change in temperature, and this characteristic is employed in a recent development of low pressure storage containers wherein the pressure is held at a constant low figure by refrigeration. Bulk storage in large quantity to the extent of tons of carbon dioxide is thus possible.

When I press the trigger of this hand extinguisher, CO_2 in gaseous and snow form is discharged. Directing the discharge at my coat sleeve, a deposit of the snow is obtained. Regardless of the temperature of the atmosphere or of the extinguisher, the temperature of the snow is always exactly minus 110 F. When the snow is compressed it is dry ice.

Despite the low temperature of the discharge, a cooling effect in the order of only 100 Btu per pound is available, and accordingly the principal extinguishing action is smothering. I direct the discharge into the pail of burning alcohol, which is suddenly quenched in a most marvelous manner. The gas quenches in passing, and leaves without deposit. Because of the nature of the discharge, close approach to the burning area must be possible.

Carbon dioxide is also employed for total flooding of rooms to make an inert atmosphere in which combustion of ordinary materials cannot continue.

Sound Waves

I would like to make just one more demonstration, not because of any practical significance in the present state of the art, but because of its oddity.

I have here an automobile horn, not of the air type but of the electrically vibrated diaphragm type. You see that when I sound it with a handkerchief hung over its bell the handkerchief does not blow away but simply vibrates, thereby showing rather conclusively that there is no appreciable draft or air current. I light this candle and place it near the horn. The horn, when sounded, sets up a terrific vibration in the flame and finally succeeds in extinguishing it. Why did the fire go out? I would like to leave you with something to think about. If you have followed me in what has been before discussed, I think you will come very close to having the right answers without becoming involved in complicated consideration of sound wave lengths, frequencies, and the like. The latter of course is another subject, theories on which are recorded in the literature.*

Demonstration Equipment

A. External Cooling
- Tin can
- Paraffin (¾ can full)
- Lead weight in can (for weighting)
- Bunsen burner, ring stand and gas supply
- Water container (approximately same height as tin can)
- Water in container (slightly higher than liquid in can after can is inserted)
- Tongs

B. Smothering (With Cover)
- 10 or 12-quart pail with cover to fit
- 1 quart alcohol

C. Smothering (Vaporizing Liquid)
- 10 or 12-quart pail
- 1 quart pump extinguisher (vaporizing liquid type)
- 1 quart alcohol

D. Cooling (Water Spray)
- 10 or 12-quart pail
- 2½-gallon insect spray pump (with water)
- 1 quart alcohol

E. Extinguishing with Dry Powder
- 10 or 12-quart pail
- 1 quart alcohol
- 2 pounds sodium bicarbonate (sifted)
- 5 pounds Portland cement (sifted)

F. Smothering (With Carbon Dioxide)
- 10 or 12-quart pail
- 1 quart alcohol
- 2-pound carbon dioxide extinguisher

G. Dilution
- 10 or 12-quart pail
- 1 quart alcohol
- 1 gallon water

H. Smothering (Foam)
- 10 or 12-quart pail
- 1 quart alcohol
- 2½-gallon foam extinguisher (charged)
- 25-gallon container
- ½-gallon wide-mouth container (see photograph)
- Blow torch or Bunsen burner

I. Flame Separation (Difficult, requires practice and technique)
- 3-inch diameter heavy container with smooth and even rim
- Alcohol to within 1/16 inch from top
- 2½-inch wide spatula

Separating the Flame from the Source with Sound Vibrations but Without Air Currents

J. Vibration
- About 1929 model auto horn (experiment before selecting)
- Battery (wire connections)
- Candle

NOTE: Matches used for ignition. Small ball of asbestos fixed to end of wire makes useful torch after dipping in flammable liquid. Table should be sturdy and protected with an asbestos sheet. Use care in dispensing flammable liquids from safety can. Be careful, and see that there is no flammable material above demonstration fires. Provide ample fire protection equipment to take care of a major accident. Practice the entire series before making demonstrations. Several of the demonstrations may be eliminated for one one reason or another without detracting from the general interest and value of the whole demonstration. Dispose of used alcohol in drain, being careful to dilute it with at least four parts water.

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*Those interested in theories on sound sensitive flames are referred to Lord Rayleigh's "Theory of Sound," Volume II (Macmillan & Company), pages 400-406, and the additional references therein noted.

January Fire Loss $26,400,000

Fire losses in the United States during January, according to an estimate made by the National Board of Fire Underwriters, amounted to about $26,470,000. This is twenty-seven per cent lower than the losses for January last year, and nine per cent below the losses for December, 1940.

Sabotage Through Fire

Foreign Government Agents Will Try to Hamper Production by Starting Fires—Need for Alertness

By E. P. COFFEY
Chief, Technical Laboratory, Federal Bureau of Investigation,
Washington, D. C.

MASSACHUSETTS has always led the states in fire prevention measures and the development of modern fire fighting means.

The people of Boston should be proud of the fact that when the President formed the Fire Defense Committee of the National Defense Advisory Commission, he selected Mayor Tobin of Boston to head the committee. Mayor Tobin and the Committee will no doubt organize many thousands of fire prevention and fire fighting units in the United States, but these units will be ineffective unless you men with specific interests will find a place in the scheme of things and take your part.

General Sabotage

We must consider very seriously the possibility of fire as a medium of general sabotage, aimed at the destruction of the national defense program. The Federal Bureau of Investigation has reason to suspect that the machinery may be in the making awaiting orders from a foreign government. I have no desire to stir up hysteria on the subject, but we must look at it in a calm, businesslike way and realize the existence of the threat. Even if it never comes, let us be prepared.

It would be ridiculous to attempt to give any formula, to attempt to discuss the technical side of fire prevention and fire fighting, since these are things which I know little about, and some of you men here have devoted a whole lifetime to it. My mission will be accomplished if I awaken you to the appreciation of the fact that a real threat does exist. Then I can feel sure that you have the technical skill to solve the problem. That threat is the threat of the saboteur.

Fire Will Hinder Defense Work

Fire in any form will be a serious detriment to the national defense program, but that is beyond my subject. I will confine my remarks to the saboteur and his threat of fire. We must remember that arson as committed by the saboteur is more serious, more dangerous, and more devastating than the ordinary commercial type of arson that we seek to destroy in peace time. The real saboteur is the agent of a foreign government and has at his disposal resources, information, and funds far greater in amount than any commercial arsonist, and his motives are more malicious and destructive. We must frankly face the fact that the saboteur in the form of an enemy agent is more dangerous than any kindler of fire in peace time might be.

Much Sabotage in 1916

The situation today undoubtedly differs greatly from that which existed in this country in 1916, prior to entry of the United States into World War No. 1. There were many violent acts of sabotage shown to have been perpetrated by the German government before the United States entered the war. As a matter of fact, historians generally agree that these violent acts of sabotage contributed greatly to our entry.

The purpose of the saboteur was to stop, so far as possible, the flow of munitions and implements of war to Germany's enemies, principally Great Britain and her allies. Today the totalitarian states, attempting to correct the mistakes of the past, do not desire to bring the United States into the war. They do not want to act openly to create hostility, but they do desire, as in 1916, to stop the flow of munitions and airplanes to their enemies.

Consider these two conflicting problems which confront dictator nations, and one possible answer may be a sabotage so carefully concealed, so carefully planned, that it does not appear to be sabotage. Sabotage by fire is one of the most plausible means of accomplishing that end, and we must realize the possibility of the threat and organize ourselves to meet it should it ever come. In an effort to determine what we should do, we might well attempt to place ourselves in the shoes of the saboteur and consider how he would plan an attack on our particular plant, line of communication, or transportation system.

Methods of Attack

Let us, for a moment, try to figure out the ways in which he will attempt to get results—interruption of the defense program and disruption of the flow of war materials to Great Britain and her allies.

First of all, he might consider two different lines of attack with two different purposes. He might attempt in advance to disrupt our methods of fire fighting, our means of communication, and other of our well-laid plans to meet the threat of fire. He might put the factory fire-alarm system out of commission; it would not be too hard to do. He might go further, disrupting municipal fire and signal-alarm systems—not a difficult thing to do. Many of our larger cities have their signal system concentrated in one building where well-planned destruction might disrupt the system and render it entirely useless. I cannot offer a solution to all of these things—I can just make you realize the possibilities and leave the solution to your own technical skill. There are cable and wire lines suspended overhead from one pole to another, open to tampering; or, in larger cities, conduits with manholes practically open to the public. Consider what a couple of spoonfuls of acid could do to these cables if spilled in the right spot.

Damage in Factories

In planning the disruption of factory production, he might disable the sprinkler system or mutilate fire hose placed for emergency use. He might ruin the coupling threads or cut the hose where it would not be apparent to the casual observer. He might put a bit of sulfuric acid in the hose. He might go further and attempt to tamper with the water supply, particularly where a separate water supply is used for fire-fighting purposes. He might empty the extinguishers and reload them with an inflammable fluid.

An instance which was not the work of saboteurs shows the possibilities in connection with the plant service work of the Federal Bureau of Investigation. In inspecting a pier and wharf area in Hoboken, on which the owners had made careful plans for fire protection, they found ninety-seven water barrels on the wharves filled to the brim and above each was a bucket marked "Fire." Had a fire occurred, even a small one, the entire structure would have gone in very short order. It seems officials of this company had had some trouble with mosquitoes, and the exterminating company which they called in solved the problem by pouring five gallons of No. 2 fuel oil into each barrel. Only through constant inspection and checking can we detect such things. The system was perfect to begin with, but would not remain so unless checked and protected.

The saboteur might attack fire fighting systems by a series of false alarms, either to cause relaxation of vigilance, or to attract efforts to another section of the plant or city—a favorite stunt of arsonists. From this standpoint, mu-

(*Continued on page* 140)

From an address given at a Fire Prevention Mass Meeting, Faneuil Hall, Boston, December 16, 1940.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

ACCIDENTS ON STREETS FROM GASOLINE TANK TRUCKS

EACH step toward better living brings with it new problems—some that are good, and some destructive.

With the more common use of the automobile, there has come a greater demand for gasoline, and that brought with it the problem of transporting gasoline to each of the many filling or service stations that stretch out along the highways.

These tanks may hold as many as 3,000 gallons of gasoline or more. Only one who has devoted some study to fire prevention problems, can fully realize what it means to have so large an amount of gasoline transported on streets through the congested value sections of the city.

When an accident does occur, prompt action and clear thinking are required. Events move rapidly, and there is always the danger of a spark setting off the gasoline fumes.

Experiences of Chiefs in fighting fires or meeting accidents involving gasoline tank trucks on city streets, is given in this issue. The problem in full is stated in the box on this page. Due to the large number of comments that were received, the discussion will be continued in the next issue.

Discussion of the Question

Edward W. Gieselman, Chief, Syracuse, N. Y.: So far as I can recall, we have had no experience of a serious nature with accidents involving gasoline tank trucks.

True, there have been accidents involving such vehicles, but up to the present time we have not figured prominently in any of them.

I do recall several instances in which gasoline has leaked from tank trucks on city streets, but fortunately for us there was no fire.

Nevertheless, we were called in and lost no time in playing a strong stream of water on the gasoline on the pavement rendering it more or less impotent through dilution, and flushing the diluted fluid into and through the sewer systems before it had a chance to ignite.

We had an unfortunate accident here recently as a result of an automobile crashing into the rear of a parked bus. The gasoline tank of the bus was ruptured and in an instant flaming gasoline enveloped the automobile causing the death of the two male occupants.

In fighting gasoline fires, we have had the greatest success, I should say, with foamite.

As regards measures to guard against hazards arising from transportation of gasoline through city streets and public highways, I believe that the State should take the initiative by adopting stringent regulations governing the operation of such vehicles.

State-wide regulations should be followed by the adoption of standard or uniform regulations by the various localities.

As matters now stand, Syracuse might have a set of model ordinances and regulatory laws throwing up every possible precaution. Local operators might comply with these regulations to the letter, but free-lance and transient operators from points beyond the city which have no regulatory measures, would move into and through the city, nullifying to a great extent the benefits accruing from adoption and enforcement of local regulations.

Thomas H. Cotter, Chief, Providence, R. I.: This department has no record of having to extinguish this type of fire as a result of an accident of a truck transporting gasoline.

For recommendations to avert such an accident, I would strongly urge that an operator of such a truck be chosen only after he has proved that he is a first class driver, and that he is cool-headed, careful and alert. I would also recommend that the speed of these trucks be held down to allow for any emergency stop.

J. P. McCosker, Chief, Bangor, Me.: We have never had but one accident involving gasoline tank trucks in this city.

Years ago a horse-drawn gasoline tank truck was delivering gasoline to the Bangor Motor Company garage on Main Street. The driver of the truck lit a cigarette, or his pipe, while standing at the rear of the truck. The gasoline ignited and away it went. Lucky for us two loads of sand were being hauled by the garage at the time. We unloaded the sand, banked the burning gasoline, and confined the fire to a small area of ground.

Fire Chiefs should ask the cooperation of all local oil company managers to make certain that none but careful, conscientious, clear-thinking employees be allowed to drive or work on any trucks or around the plants.

All the oil company managers here in Bangor are cooperating with us in this respect. The results are great. With the great many tank trucks hauling the thousands of gallons of gasoline every day through the streets, it has entered my mind several times how careful they were, and what a fine job they were doing in delivering all this gasoline without more accidents. I have never had any experience with these gasoline tank truck fires, but it always seemed to me that they were caused by carelessness on someone's part. Perhaps it would be a good idea if the driver of every tank truck were to display a sidewalk warning stand sign ten feet beyond each end of his truck while he was unloading gasoline. This might read "Danger, Truck Unloading Gasoline, Please Don't Smoke or Strike Matches While Passing," or something to this effect.

Fire Chiefs who know of carelessness on the part of tank truck employees, or plant employees, should report the same to the oil company manager at once. He will get results as the oil companies do not want accidents.

Norman C. Pritchard, Chief, Ferndale Mich.: I would like to relate an experience which my department had with a gasoline truck fire on October 2, 1940.

Upon arriving at the scene of the fire, we discovered flames rising around the caps of every compartment and around the catwalk on top of the tanks. We first tried smothering the blaze by throwing a tarpaulin over the tank, but as there was too much air space underneath, this did not have any effect, and we finally extinguished it with a 2½-gallon foam extinguisher.

As to the cause, I am at a loss to say, unless it could have been a static spark caused by the chain becoming magnetized. The driver of the truck says he heard an explosion and stopped his truck immediately and departed for points distant.

The only precaution I can suggest is that these chains be de-magnetized regularly and more often. The truck in question had a total of six compartments, two of which were empty with the top vents open.

John Griffiths, Chief, Scranton, Pa.: We have never had a tank truck fire, but we have had two trailer truck fires where the trucks were on fire and the

HERE IS THE PROBLEM

Have you had any experience with accidents on your streets involving gasoline tank trucks?

If so, did leaking gasoline ignite?

What method of extinguishing fire was employed? Was it successful?

What can be done by Fire Departments to guard against the hazard?

gasoline tanks burst in the wreck, with gasoline running down the street. We laid two big water lines, one to switch the gas into the sewer basin and the other to extinguish the flames on the truck. Both worked out successfully. In both cases the gas ignited.

In the event that we have a tank truck fire, and the gasoline ignites, we plan to lay three water lines, one to play on the tank, one to play directly into the sewer basin, and the third to make the gasoline flow into the sewer.

If there is no sewer in the vicinity of the fire, we will try to direct the gas stream into an empty lot.

Daniel H. Shire, Chief, Mason City, Ia.: We have had only one case of an accident involving gasoline tank trucks in the last thirteen years.

This was an 800-gallon three-compartment truck with three faucets on the rear. Backing into a filling station to unload this gas into the underground tank, the driver knocked off one of the faucets. The driver became panicky, drove out on the street, and keeping as close to the curb as possible, drove around car after car parked at curb until he had emptied the tank, a distance of twelve blocks. There was no fire. The Fire Department used a large amount of water and washed the gasoline into a storm sewer.

We now require rear guards to protect faucets.

In the event of a fire, I believe I would have used a fog nozzle.

Victor H. Veit, Chief, Stamford, Conn.: Not so very long ago I received a call about an accident between a pleasure car and a 1,000-gallon gasoline tank truck. It was at a junction where two streets cross. The truck, in an effort to avoid the accident, turned completely over. The gasoline slowly flooded the street and very fortunately did not ignite.

On arrival, I immediately ordered a 2½-inch hose line laid from the nearest hydrant. A 1¼-inch fog nozzle was then used to gently flush the gasoline to the nearest catch basin. This practice was kept up until a wrecker righted the tank truck again. Meanwhile the entire area within the radius of a block on all sides was policed to remove the slightest possibility of ignition. When the truck was righted and all trace of gasoline washed from the street, the catch basin was flushed for about fifteen minutes to remove any fumes and remaining gasoline.

This procedure was successful, first, because it did not ignite, and second, because any possibility of ignition was removed from both the street and catch basin. If, however, it had ignited, I would have approached it in exactly the same manner. It no doubt would have presented a much more hazardous situation if it had ignited.

There is nothing much that can be done by the Fire Department to guard against the hazard of tank truck accidents. I myself try to sell the idea to the heads of the various corporations of the value of employing truck drivers of a high calibre, men who respect high standard safety records. In this way, at least one of the principals in a possible accident is careful.

John Luxembourger, Chief, Santa Ana, Cal.: We have been very fortunate in regards to gasoline tank truck collisions. Recently we had a gasoline truck and car collide, puncturing a hole in a 140-gallon compartment of the gasoline truck. The 140 gallons of gasoline leaked into the street, but did not catch fire. We had to put up sand and earth dykes to hold the gasoline, and then picked it up with sawdust and dry dirt.

The other experience we had was with a 20,000-gallon capacity trailer tank. A car had run into the back of the trailer and broken off a part of the tank pipe causing the gasoline to leak out into the street and catch fire. We used two lines of 2½-inch hose with ⅞-inch tips, striking it at about a 45° angle. The fire was immediately extinguished.

To guard against this hazard, proper valves should be installed in all tanks to be used for the transportation of gasoline, and all other tank trucks but those destined for a particular city should be routed around that city to keep them away from the high value district.

C. M. Johnson, Chief, Knoxville, Tenn.: We have had no accidents on our streets involving gasoline tank truck fires.

The gasoline tank truck hazard is handled by our Bureau of Fire Prevention. The fire prevention inspectors make monthly inspections of all motor-propelled tank trucks for the purpose of ascertaining conditions of same.

Also, such tank trucks are stopped on the streets and highways and given a thorough inspection, being checked for drag chain, first-aid appliances and leakage. If the apparatus is found to be in unsatisfactory condition, it is ordered back to its plant for necessary repairs or corrections.

When leaks are found after repairs have been made and the Bureau has been notified of same, the Bureau then makes a further inspection, also requiring a 1½-pound air test for two hours.

L. B. Barnum, Chief, Phoenix, Ariz.: We have had one gasoline tank truck accident. In a wreck with an automobile, the tank truck overturned. The gasoline, however, did not ignite.

To eliminate any possibility of the gasoline igniting while the truck was being set on its wheels again, we kept the fog nozzle spraying on the truck. We roped off the area around the truck and permitted no smoking on the part of the onlookers. The gasoline that was spilled on the ground was covered with several loads of sand. In this manner we eliminated the occurrence of any fire and any possible loss of life or property.

This hazard can best be handled by outlining a tank truck route over which the trucks can travel and keep them out of the high value district.

Grover L. Frock, Chief, Springfield, Ohio: We had a fire in a gasoline truck just at the edge of our city on Route 4, caused by the drive shaft of a tractor breaking, striking the service tank and rupturing the tank. The gasoline took fire from the sparks, setting fire to the trailer tank, and igniting the vents.

We extinguished the fire with foamite very quickly. We used a generator and got our water supply from booster tanks. Our setup was booster line to generator, and 1½-inch hose from generator with regular 1½-inch nozzles. We also used a booster line to put out the fire on the tires.

The Ohio Fire Chiefs Association now have a bill pending in the Ohio Legislature to bring the transportation of gasoline under state control.

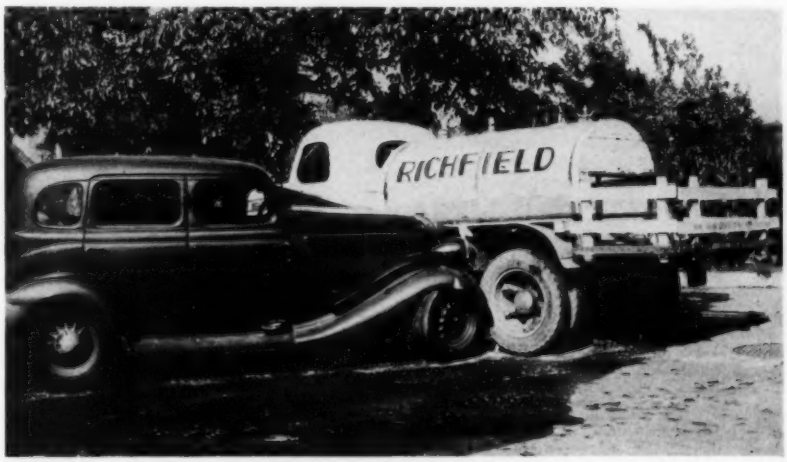
The large gasoline truck is a serious hazard and should be controlled.

Trailers, other than the semi-trailer type, should not be allowed, and no large tank truck should be allowed to pass through a town or city.

(To be concluded)

THIS DISCUSSION WILL BE CONTINUED

Due to the large number of Chiefs who contributed their experiences, the discussion on this subject will be continued in the next issue.



Photograph Taken After the Cleanup

The automobile punctured a 140-gallon compartment of the truck, and luckily no fire developed.

Among the Fire Fans

By Otis Smith

BOX 35 Associates, Minneapolis, has had a change of officers, due to various circumstances. Jack Fuller is the new head of Box 35. Thomas Edmunds is Deputy, and Jack Chrissinger is Secretary. "Stub" Chrissinger was forced to resign from the club, due to a heart ailment.

Box 9 Association, Attleboro, Mass., has altered the by-laws, to accommodate an increased membership. Members of Box 9 have shown numerous motion pictures of fires. Deputy Chief Keith of the Needham, Mass., Fire Department also exhibited a color film, prepared for the purpose of acquainting Needham residents with the workings of their department. Jesse Carpenter, Jr., is Secretary of Box 9, which may be reached by addressing mail to the Central Fire Station, Attleboro, Mass.

The San Francisco *Phoenician News* carried several interesting items in the latest issue. This publication is the organ of the Phoenix Society, a really swell fire-fan outfit. Dr. E. Ker heads the group. His address is 909 Hyde Street, 432-440 Medical Bldg., San Francisco.

A group of Baltimore fire fans have organized for greater enjoyment of their hobby. The group has styled itself the Box 13 Association. Leslie E. Keller heads the group. Other members are: Don Ederr, Kayton Moses, William Murray, Ferdinand Birchbauer, Francis Kemper, and Robert Grumbine. Organized on Feb. 13th, the group is on the lookout for more members.

As this new club is in Baltimore, as is this writer, it may be well to explain that the writer has no connection with the Box 13 Association. This, it is hoped, will eliminate the confusion of having readers of this column addressing mail to the Box 13 in care of this column. Mail to Box 13 Association should be addressed to the club secretary, Kayton Moses, 3826 Dolfield Ave., Baltimore, Md.

Baltimore fans will be interested to learn that several more new tractors are due to be delivered during the next few weeks. This will place a new tractor on almost all the aerial trucks. . . . This writer accompanied the Fire Chiefs' Club of Maryland, on their recent meeting in Baltimore. Chief Howard Travers took the group on board Engine 48, the fireboat Torrent. First stop was the house of the fireboat Cataract, then to the modern house of the Deluge at Fort McHenry. The visitors also climbed through the Deluge. The Torrent's quarters in Canton were skipped and the final stop was at the fireboat Sub-Chaser, Curtis Bay. On the return trip, most of those aboard repaired to the galley and saloon where Chief Travers entertained the gathering with tales of the fire department.

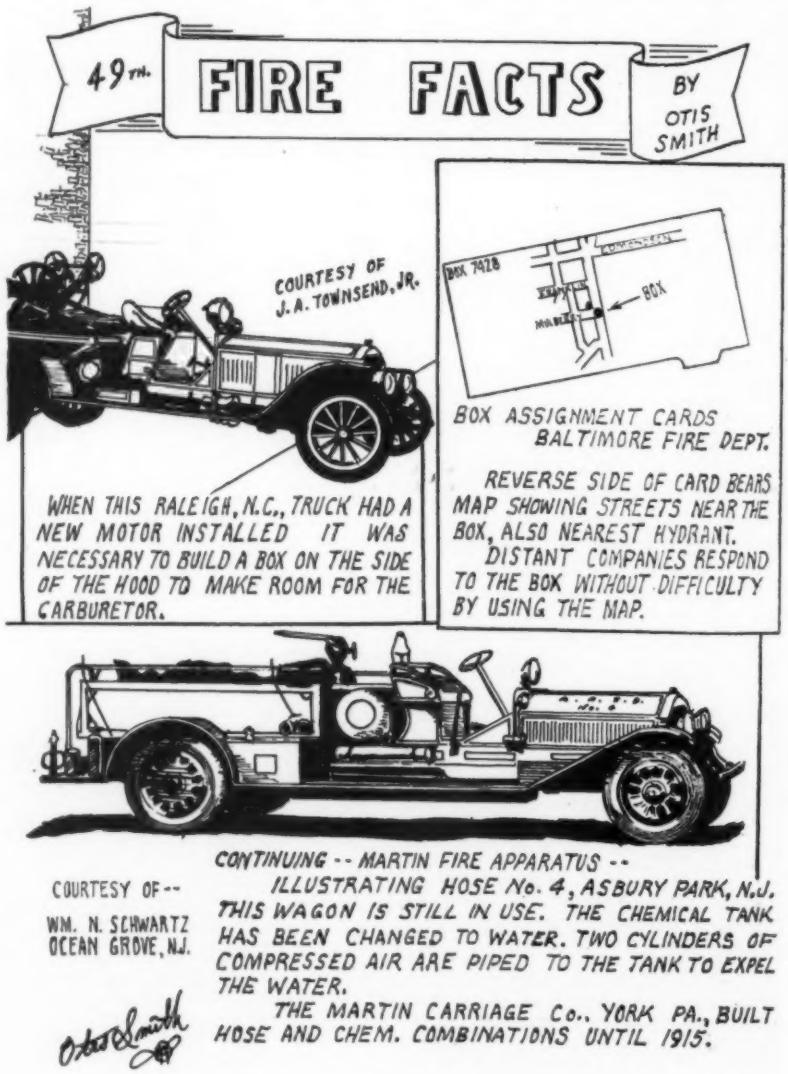
Apologies to "Babby" for that mistake in the last issue. *The Blanket*, organ of the Rockland County Emergency and First Aid Council, New York, goes free to all persons interested in First Aid and Emergency work. Voluntary contributions are asked from readers of *The Blanket* in order to keep the paper going. Such contributors are made Associate Members of the Council. The Council will hold a Mock Disaster Mobilization in Nyack, May 17. This will be the third such happening, and the Council expects to fill the town with ambulances, emergency wagons, police, scouts, nurses, doctors, and others. Secretary Wm. Paul Babcock can give additional information on the subject. His address is 218 North Midland Ave., Nyack, N. Y.

To Chester Speed, Torrington, Conn. Kindly send a self-addressed stamped envelope for that information you desire. . . . Thanks to Scrappy Patterson for those two swell photos of the Pittsburgh fires. The icebound pumper was especially interesting. . . . Readers who hear of that 14-alarm fire that Baltimore had February 16, are requested not to write for a copy of the assignments. This writer obtained only one copy of the assignment sheet and would not be able to handle all the requests, as it would be necessary to make hand copies of the sheet. When this column offered the time sheet on a 15-alarmer that Baltimore had last year, over eighty requests were received. Luckily, the editor printed up a supply of the sheets. In this case, however, the writer has decided not to offer copies of the 14-alarmer.

Thanks to Joe Orendorf for those nice photos he sent. They included views of the Detroit drill school, also photos of old apparatus in the Ford Greenfield Village Exhibit. Mr. Orendorf's correct address is 3524 Lawton Ave., Detroit, Mich. . . . Also thanks to Wm. Schwartz for the collection of pictures he was kind enough to send. Mr. Schwartz lives at 72½ Embury Ave., Ocean Grove, N. J.

Chief Wilson Dead

Chief George E. Wilson of the Dowagiac, Mich., Fire Department, passed away recently at the age of fifty-six years. He was a member of the department for fifteen years, acting as Chief for the past ten years.


49TH.
FIRE FACTS
BY OTIS SMITH
COURTESY OF J. A. TOWNSEND, JR.
WHEN THIS RALEIGH, N.C., TRUCK HAD A NEW MOTOR INSTALLED IT WAS NECESSARY TO BUILD A BOX ON THE SIDE OF THE HOOD TO MAKE ROOM FOR THE CARBURETOR.
BOX 7428
BOX
BOX ASSIGNMENT CARDS BALTIMORE FIRE DEPT.
REVERSE SIDE OF CARD BEARS MAP SHOWING STREETS NEAR THE BOX, ALSO NEAREST HYDRANT.
DISTANT COMPANIES RESPOND TO THE BOX WITHOUT DIFFICULTY BY USING THE MAP.
COURTESY OF -- WM. N. SCHWARTZ OCEAN GROVE, N.J.
CONTINUING -- MARTIN FIRE APPARATUS --
ILLUSTRATING HOSE No. 4, ASBURY PARK, N.J. THIS WAGON IS STILL IN USE. THE CHEMICAL TANK HAS BEEN CHANGED TO WATER. TWO CYLINDERS OF COMPRESSED AIR ARE PIPED TO THE TANK TO EXPEL THE WATER.
THE MARTIN CARRIAGE Co., YORK PA., BUILT HOSE AND CHEM. COMBINATIONS UNTIL 1915.
Otis Smith

British-American Firemen's Canteen Fund Grows

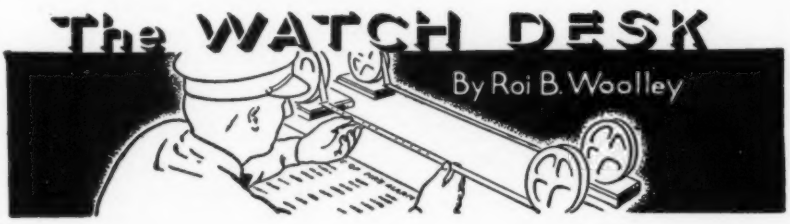
The fund being raised in American fire service for purchase of mobile kitchens, or canteens, for the heroic personnel of the British fire service is growing rapidly. Hardly had the first announcement been published before donations began flowing in. The following were among the first:

Akron Brass Mfg. Co., Wooster, Ohio	$100.00
Westchester Volunteer Firemen's Assn.	50.00
Fairfield County Emergency Plan	25.00
Larchmont, N. Y., Fire Department	25.00
Irvington Fire Co., Peekskill, N. Y.	25.00

Numerous other checks, too many to list here, have also been received from fire companies, individual firemen, and friends of the fire service.

The British-American Firemen's Canteen Fund, which has the approval of the British Mission, is raising the money under the guidance of Chief Roi B. Woolley, one of the organizers of the Westchester County, N. Y., Fire Chiefs Emergency Plan, and its president until last year.

Those who would like to participate in this worthy movement may send their contributions to Chief Roi B. Woolley, care of FIRE ENGINEERING, 24 W. 40th St., New York, N. Y.



Our inquiring reporter overhauls the firemanic news of the day

Doubling in Brass

Unsigned Contrib' sends us a story about Policeman John Feld of Freeport, Ill., who hadda double as a fireman in making an arrest. Seems, he found a man —er, shall we say slightly inebriated? —with his tie ablaze, apparently, ignited by sparks from a cigarette. Bluecoat Feld procured a glass of water, splashed it on the tie—literally 'sousing the souse'—then escorted his charge to station house where he was booked as *"being drunk and on fire."*

* * *

Aw Now, Come, Come!

Mebbe he's just "giving us the bird" and mebbe he's trying to go Ripley one better, but Earle Robinson, demon clipper of Des Moines, sends us an item from Hillsboro, Ore., which tells about a fire at the home of Mr. and Mrs. George Hendred, which did little damage, but smoke from which "knocked their pet canary cold." What's so Ripley-esque about it is the statement that *"the fire department rushed the bird to an inhalator and revived it with gentle doses of oxygen."* We're all atwitter to know just how "gentle doses of oxygen" can be given a canary (even a tame, unconscious one) with an inhalator! Tell us, Earle!

* * *

Rubberneck Firemen!

Evidently that "good neighbor" stuff has its limits. Out in a certain community (we won't say where) firemen watched from right across the street as a nursery warehouse, filled with hay, tools, an automobile, cow and three horses burned to ground, loss $4,000, without lifting a finger, or squirting a squirt! Yeah—they were "bound by regulations" from fighting the fire because it was just outside their city limits! Three city trucks, well manned, had to stand by and merely guard city exposures while neighbors rescued the animals and futily played a garden hose on the flaming frame structure, well within reach of the city's forces. How long will stupid laws and stupider legislators permit conditions like this to endure.

* * *

Can You Use a Good "Fire Trapper?"

An unnamed reader sends us a Ripley! It's about a storekeeper, down near Monroe, La., who "trapped a fire and held it prisoner until firemen raced 46 miles to put it out."

W. A. Ober, general store proprietor is the 'trapper.' Asst. Chief Tom Dupree of Monroe, La. F. D. tells this story:

"When we arrived we found one of the strangest things we had ever seen. Ober, discovering his store on fire, at first was at a loss what to do. Suddenly he decided. He closed every window in the place, stuffed all the cracks with paper and sacks and then climbed on the roof and shoved more sacks down the chimney, cutting off any possible draft. He checked the fire, causing it to smoulder instead of blaze. Friends suggested that he open the place and let them dash in and get out as much stock as possible. He refused. We ran 900 feet of hose from a small bayou to the store and had Ober open the door. Flames immediately broke out, but we had good pressure on our line and put out the fire within five minutes. Two thirds of the stock were saved.

* * *

Hot Off the Ticker

Tom Magner tells us about Mrs. Ellen Conklin, 78, of Stamford, Conn., who could not get over the habit of smoking her corn cob pipe and who did it once too often, when she dozed off and falling sparks ignited her clothing causing injuries from which she died. . . . . Near Florham Park, N. J., Mrs. Jane Crosby, widow, maintained a haven for stray dogs, often arousing ire of neighbors, well—it burned to ground and ten animals were destroyed. . . . Between "12,000 and 15,000 deaths" were caused when a gas stove exploded at the Vailsburg, N. J., aquarium, yeah, they were tropical fish, worth $3,000. . . . . Ruth Penny, attractive lass from Baton Rouge, La., visiting New York City, told police that the only man she ever loved tried to burn her to death. Man, Charles Young, 42, unemployed house painter, was arrested for homicide after she was found in a basement suffering from burns from which she died. . . . . Unknown man committed suicide near Tamaqua, Pa., by blowing self up with dynamite. . . . . After his eighth false alarm of day, John Chico, 23, N. Y. City, was pinched, gave as his reason for snapping boxes *"I don't like cops and I don't like firemen."* . . . Burglars turned in false alarm which took firemen of Anderson, Ind., to a hospital. Upon their return to quarters they found lockers had been robbed of $300. . . . . Speeding Brooklyn, N. Y. F. D. rescue squad truck collided with a commercial van, hurled van onto sidewalk, killing one woman, seriously injuring two men. . . . . Albert Atkinson, 52, widower, set his farm home near Florence, N. H., afire, then hanged himself in nearby shed, leaving at his feet, a bible and insurance policies, which firemen and police later discovered, with the corpse. . . . . Near Billings, Mont. a truck struck a steer on a bridge, overturned and caught fire. So did bridge. Driver, Frank Cleveland, 25 and a girl companion were injured. . . . . Frank McAllister, 80, Hackensack, N. J., died from burns caused by blazing newspaper, held on his lap. Paper was ignited by flying head of match he struck. . . . . 1940 traffic toll is put at 35,000 lives according to National Safety Council, 2,000 above 1939 level.

* * *

Hot Off the War Ticker

In London a fireman called to a fire caused by an explosion found that one of wrecked houses was his own—and his wife had been killed. . . . When a trunk was being handled at an express depot in New York City and the American Express Worker heard a ticking, police, who were notified, took trunk to old N. Y. Stock Yard, doused it in 30-gal. drum of oil. When opened, trunk was found to contain clothing, etc., owned by a Mr. John Keeton. Ticking came from automatic radio code practice set, spring-wound, which had been set off. . . . New York City demonstrated value of fireboat in fighting inland fires when, in 4-hour test, the John Purroy Mitchel

(*Continued on page* 142)

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Small Lines, etc.

To the Editor:

1. How do you find the values of "K" for small lines and small tips? What is the formula for finding friction loss in small lines?

2. An operator is ordered to use 90 pounds engine pressure at all times for a booster tank. 250 feet of 1-inch booster line hose is rolled on a reel. 150 feet is pulled off the reel, leaving 100 feet.

What is the nozzle pressure? What is the flow in gallons per minute? How much do you allow for friction loss in the hose left on the reel?

3. A 1,000-gallon centrifugal pumper, having a rated capacity of 120 pounds is taken to a river to be tested. Suction lift is about 9 feet, using two 10-foot lengths of 6-inch stiff suction hose. Three parallel 50-foot lines of 2½-inch hose are taken off the pumper and siamesed into a 2-inch deluge set. What will be the nozzle pressure? What will be the discharge?

4. Is it possible to find friction loss for lines longer than 100 feet?

5. Is it possible to have greater pressure at the nozzle than at the pump? S.L.P.

Answer: While the values of "K" for small lines and small nozzles can be solved by multiplying the nozzle diameter by itself four times, dividing by ten, and then dividing again by the conversion factor for changing the hose to 2½-inch, this procedure does not give accurate values of "K" for very small lines and small tips.

This is evident when we compare the results secured by use of such values of "K" in the formula with experimental values for friction loss in small lines.

Below is given a table of values of "K" for small hose lines and nozzles which give fairly accurate results.

Size of Nozzle	Single Line ¾"	Single Line 1"	Single Line 1¼"	Single Line 1½"
¼	.235	.060	.025	.0084
⅜	1.035	.256	.088	.036
½	3.0	.748	.258	.104
⅝			.578	.234
¾				.455

In the use of these values of "K", the formulas for engine pressure and nozzle pressure are as follows:

E. P. = N. P. × (1 + KL)

N. P. = E. P. ÷ (1 + KL)

Using these values of "K" and the formulas given, results tally fairly close to experimental results.

The formula for determining friction loss in small lines of hose is as follows:

Friction loss of (100 feet) = 40 × (2Q² + 1/6 Q) × C, where Q is the flow through the line in hundreds of gallons per minute, and C, a factor depending upon the hose diameter.

Values of C are as follows:

For ¾ inch hose, C is 11.7

For 1-inch hose, C is 2.5

For 1¼ inch hose, C is 1

For 1½ inch hose, C is 0.4

For 2-inch hose, C is 0.1

The above formula is for calculating friction loss in rubber lined hose. You will find that this formula gives satisfactory results.

The solution to the booster tank problem you give is as follows:

N. P. = E. P. ÷ (1 + KL)

L = 250 ÷ 50, or 5

K, for 1-inch hose and ¼-inch nozzle is .06.

Then N. P. = 90 ÷ (1 + .06 × 5)
= 90 ÷ 1.3 = 69.2 pounds

Discharge = 29.7 × ¼ × ¼ × $\sqrt{69.2}$
= 15.444 gallons per minute

The friction loss per hundred feet of 1-inch hose carrying 15.444 gallons per minute is 40 × (2 × .15444 × .15444 + 1/6 × .15444) × 2.5
= 10 × .7344 = 7.344 pounds

The friction loss per 250 feet of 1-inch hose would be 2.5 × 7.344, or 18.36 pounds.

The engine pressure, where a line is laid horizontally, is equal to the friction loss plus the nozzle pressure, or 69.2 + 18.36, or 87.56 pounds.

Note that the original engine pressure was 90 pounds, so that the error is but 2.44 pounds.

In the problem no additional allowance is made for increased friction loss due to the hose being wound on the reel, as such increase would not be more than five or six percent.

The solution to the problem involving the 1,000-gallon centrifugal pumper, with a rated capacity of 120 pounds, is as follows:

First, it is assumed that the engine is operating at 120 pounds pressure.

The formula is as follows:

N. P. = E. P. ÷ (1 + KL)

K, for 2-inch deluge set on three parallel lines of 2½-inch hose is .190.

Then N. P. = 120 ÷ (1.1 + .190 × 2)
= 120 ÷ 1.4
= 81 pounds approximately

As the value of "K" in the formula takes into account the friction loss for siamese, no reduction for friction loss in the siamese is necessary.

As the engine is lifting water nine feet, the negative pressure is 9 × .434, or 3.906 pounds.

The actual pressure delivered by the enngine is then 120 + 3.9 = 123.9, or 124 pounds approximately.

Discharge = 29.7 × d × d × $\sqrt{p}$
= 29.7 × 2 × 2 × $\sqrt{81}$
= 1069.2 gallons per minute

Theoretically, the engine cannot deliver this performance, for its rated capacity is 1,000 gallons per minute at 120 pounds, while the performance would require a capacity of 1069.2 gallons per minute at 124 pounds.

While formulas for friction loss give the friction loss in one hundred feet of hose only, the friction loss in longer lines can be found by multiplying the friction loss in one hundred feet by the number of hundreds of feet in the line. Thus if the friction loss in one hundred feet of hose is ten pounds, the friction loss in 200 feet will be 20 pounds; in 300 feet, 30 pounds, and so on.

It is possible to have greater pressure at the nozzle than at the engine. Such a condition might exist where the pump is operating through a line laid down an incline.

Extinguishing Sulphur Fires

To the Editor:

How should a sulfur fire be fought? J. H. G.

Answer: Water is about as good an extinguisher as you can find for operating on sulfur fires. Used in the form of a spray, it absorbs a lot of the pungent gas (sulfur dioxide) thrown off by burning sulfur.

Surface sulfur fires are not considered difficult ones to extinguish.

Static Head and Velocity Head

To the Editor:

How do you convert static pressure into flowing pressure? H. B. M.

Answer: Both static and flowing pressures are measured in the same unit, namely, pounds per square inch. If there were no friction loss in the orifice, through which water were flowing, under static pressure, the flowing pressure would be identical with the static pressure. However, if there is friction loss in the orifice or in the hose, pipe or other duct leading up to the orifice, then the flowing pressure will be less than the static pressure by the amount of friction loss.

Prolonging Life of Hose

To the Editor:

We have a fire truck and have been carrying our hose piled up lengthwise in the truck. We find that, not using our hose very often, it is cracking in the bends.

Would it be advisable to mount this hose on a reel which in turn is mounted on the truck? M. A. W.

Answer: The best method of keeping fire hose in good condition is to flush it out with water at least once a month, and restack it in the body of the ap-

paratus so that the folds do not always fall in the same place. This is the practice commonly followed by most departments, and serves very well in preventing the hose from cracking at the bend.

I do not believe the use of the large reel would solve your problem, for the rubber lining would age just as rapidly as when folded in the body of the apparatus, provided the hose were not flushed and dried regularly.

Practices at Ft. Bragg, Cal.

The personnel of the Fort Bragg, Cal., Volunteer Fire Department consists of a Chief, three Assistant Chiefs, a President, two Fire Marshals, three Trustees, a Treasurer, and a Secretary. The apparatus consists of four trucks, fully equipped to meet almost any situation.

Chief H. G. Kraus

Most of the members of the department are employed in the Redwood Mill of the Union Lumber Company. The company permits any member relief to attend fires at any hour. All members are paid a nominal sum for attending fires and drills. One member stays at the station at night, to answer alarms and cares for the trucks. Fourteen of the members are trained in first aid, having passed the required tests.

Recently a man was marooned on a rock out in the ocean, and about thirty yards from the nearest bluffs. Two of the members swam out to him and found that he had a broken leg and arm. A stretcher was then taken, to which the man was strapped, and then the members swam back to shore with the stretcher between them.

For average fires beyond the booster stage, the lines are laid from the fire to the hydrant with 1½-inch hose, 150 feet on each side to the siamese, and then 2½-inch hose to the pumper. This plan is used for two of the trucks, and another truck has the straight 2½-inch hose. A three-way multiversal is used on larger fires.

$100,000,000 NEEDED IN NEW FIRE APPARATUS

Mayor LaGuardia of New York City Urges $43,000 of New Fire Apparatus for Each Present Fire Company

In an address before the United States Conference of Mayors at St. Louis, Mo., on February 20, Mayor F. H. LaGuardia of New York City, who is President of the Conference, urged cities to strengthen their fire departments in preparation for possible enemy air raids. On the basis of $43,000 needed for reinforcing each present fire company, a total investment of $100,000,000 would be required by cities within bombing range of the two oceans to bring their fire defenses up to effective strength.

Declaring that he was a realist, not an alarmist, he said: "I will grant that there are 97 percent probability that we may not be attacked, but neither the United States Government nor any mayor can take that 3 percent chance."

He added that if there were an invasion the civilian populations would be in the front line trenches, subject first to incendiary bomb attacks.

From a study made of fire fighting under war conditions, he said, each city must have available about $43,000 of supplementary portable pumping engines and other equipment for each present fire company.

In New York that would require an expenditure of about $16,000,000; in Boston $2,000,000; in Baltimore $2,500,000; Pittsburgh $1,500,000 and Philadelphia $3,000,000.

Chief Sroka Dead

While directing fire fighting operations in a neighboring town, Chief Chester Sroka of the Portage, Wis., Fire Department was stricken with a fatal heart attack. He was pronounced dead on his arrival at the hospital. Chief Sroka has been at the head of the Portage Department since 1940.

Engine Replacement Asked

The Board of Fire Engineers, Maynard, Mass., recommended in their annual report, the replacing of a twenty-seven-year old combination truck which is now in service. It was also recommended that the Chief of the department be appointed for an indefinite time, with removal only by cause, and that he be responsible for the direction, efficiency and control of the department.

Twenty-four of the Members of the Fort Bragg, Cal., Fire Department

10 MEN PERISH IN 3-ALARM FIRE IN QUILTING FACTORY

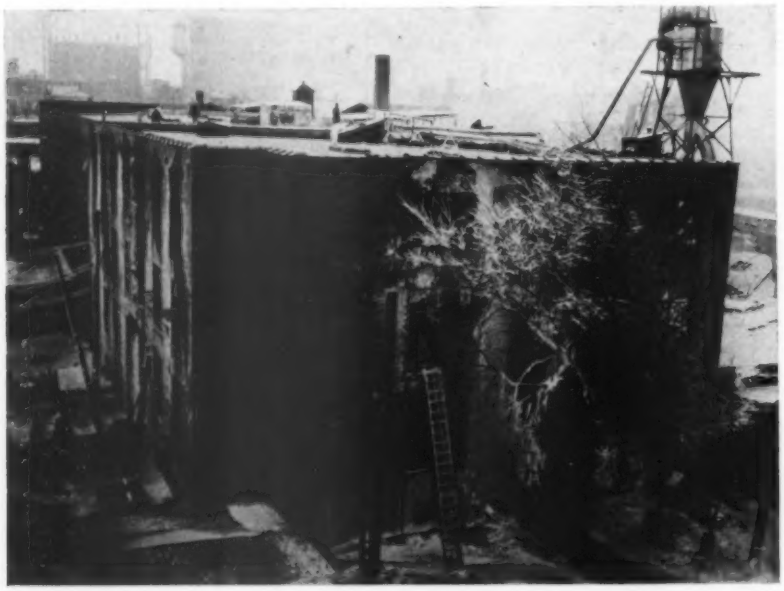
Rapid Spread of Flames in Cotton Filled Room Cuts Off Escape—Plant Busy on U. S. Defense Orders

By Thomas F. Magner

TEN men, employed at the plant of the New Haven Quilt and Pad Company, Franklin Street, New Haven, Conn., perished when a fire broke out in a cotton-filled room on the third floor of the three-story brick building on February 5. Three other employees were injured seriously when they jumped to safety, and fourteen others escaped with minor injuries. Assistant Chief Francis Spaine was painfully injured when he was struck by flying glass. Several other New Haven firemen were injured and suffered frostbite.

The fire broke out at 2:17 a.m., while all of the employees were working in one department on the third floor. It was said that the fire originated in a three-in-one Garnett machine used for picking cotton from bales, breaking it up, combing it to remove foreign particles and then fluffing it. A friction spark or static electricity occurring in the machine might have been the cause of the fire.

The cotton-picking machine was located immediately adjacent to the fire escape door, but the fire, spreading quickly through the open bales around the machine and door, instantaneously cut off that means of escape. A fire door leading to an inside stairway at the opposite end of the third-floor room was reported to have been closed during the progress of the fire to prevent the spread of the flames. Because of the terrific heat, and the huge clouds of dense smoke accompanying the burning cotton, which made it impossible for men to see one another, it was not realized that some of the men had been left behind in the burning room.



View of the New Haven Quilt and Pad Company, the Third Floor of Which Was Gutted by Flames

The foreman of the plant stated that in the center of the room there was a trap door covering a chute which led to the second floor. This chute was used for dropping finished products to the second floor, but it had not been used for so long that most of the men did not know of its existence.

One of the employees of the firm, working in the basement of the building at the time, saw some of the burning cotton fall from the upper floors and rushed to a small basement room where the main valve for the sprinkler system was located. He told investigating officers that he found the valve marked "off" and that it was sealed. With the aid of another employee, he forced open the valve with a prying bar and "heard the water rush through."

Arriving shortly after the first alarm was received, Chief P. Heinz immediately ordered a second and third alarm, bringing out all available firemen and apparatus to the scene. Assistant Chief Spaine and Battalion Chiefs William Ellis and William Kilroy directed companies in carrying water lines to the third floor. Hosemen from Company 17, under Battalion Chief Richard Green, went to the roof of the building and fought the fire from that point.

It was almost one hour from the time of the first alarm before the firemen were able to take water lines into the rear of the building through the battered down fire-escape door. It was then that they found the first of the bodies which were burned beyond recognition. Firemen fought the blaze for four hours before they were able to extinguish it.

After the fire was brought under control, four separate investigations of the tragedy were started immediately by police officials, Coroner J. J. Corrigan, Acting Fire Marshal E. J. Mulligan, and the Federal Bureau of Investigation. The latter group of officials were brought into the probe when it was feared that there had been sabotage. The company had been engaged twenty-four hours a day in filling a $2,000,000 defense order for comforters for the United States Government.

Interior View of the Quilt Company Showing Preparations Being Made to Remove One of the Bodies. Ruined Comforters Are Scattered on the Floor

WHAT'S BURNING

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of February, 1941. These figures, compiled from the telegraphic reports, are based on estimates made at the time, and are subject to later investigations and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent losses in thousands of dollars.

Month Ending February 28	Loss in Thousands of Dollar
Albemarle, N. C.—Yarn mill, damaged	80
Vernon, Tex.—Northside school, destroyed	60
Louisville, Ohio—Two story business and apartment building	60
Danbury, Conn.—Main Fair Grounds Building and Concessions, destroyed	50
Portsmouth, N. H.—Business block, damaged	80
Bucyrus, Ohio—One story mfg. plant and office building destroyed	80
Clinton, Ind.—Meyer Baking Company, damaged	50
Caldwell, Kan.—General store, destroyed	60
Toledo, Ohio—One and two story machine shops, damaged	50
Ottawa, Ont.—Business building, damaged	115
Niagara Falls, N. Y.—Business block, destroyed	50
Butler, Pa.—Three stores	450
Braddock, Pa.—Business buildings, damaged	80
Selah, Wash.—Central school building	50
Terrehaute, Ind.—Tipple and washing plant of Blackhawk coal mine	175
Lansing, Mich.—Five-and-ten-cent store, destroyed	60
Carrier Mills, Ill.—Carrier Mills public school, destroyed	80
Orono, Me.—Business block, destroyed	80
Danvers, Mass.—Large dairy barn and equipment, destroyed	50
Portland, Ore.—Industrial plant, damaged	150
Johnstown, Pa.—Building and plant of Motor Sales Company, destroyed	50
Stamford, Tex.—Cotton warehouses, destroyed	175
Alexandria, Va.—Department store, damaged	100
Corbin, Ky.—East Ward school, destroyed	50
Geneva, N. Y.—Foundry plant, destroyed	250
Greenville, Tex.—Cotton warehouse	80
Winnipeg, Man.—Business block, damaged	70
Oakman, Ala.—Business block, destroyed	50
Corning, Ark.—Combined grade and high school, destroyed	70
Chicago, Ill.—Good Housekeeping Ships, Inc., damaged	50
Lynn, Mass.—Business building housing a furniture company	50
Red Bank, N. J.—Business building, damaged	80
Pittston, Pa.—Department store, damaged	60
Wilkes-Barre, Pa.—Bus terminal, destroyed	140
Duluth, Minn.—Club house and hotel	180
Clarksdale, Miss.—Lumber yards destroyed.	50
Canton, Ill.—Fraternal lodge building, destroyed	60
Wilkes-Barre, Pa.—Furniture manufacturing plant, destroyed	115
Danville, Va.—Business building, destroyed.	50
Mardale, Ont.—Four stores in business block, destroyed	60
Bonito Springs, Fla.—Lumber plant, destroyed	100
East Chicago, Ill.—Garage and business establishments, destroyed	225
Providence, R. I.—Freight office building, destroyed	80
Texarkana, Tex.—Industrial manufacturing plant, damaged	80
Toronto, Ont.—Furniture company building, damaged	50
Andover, Mass.—Plaxtex Corporation plant, damaged	65
Syracuse, N. Y.—Business building, damaged	250
Sacramento, Cal.—Theatre building, destroyed	50
Bonita Springs, Fla.—Lumber mill, destroyed	80
Alexandria, La.—Sunshine Transfer Company plant, damaged	80
St. Paul, Minn.—Business establishments, destroyed	80
Albion, N. Y.—Coal and storage plant	60
South Philadelphia, Pa.—Hardware and paint store, destroyed	115
St. John, N. B.—National Defense Exhibition buildings, destroyed	80
Jacksonville, Fla.—Two buildings of manufacturing plant, destroyed	70
Alton, Ill.—Business building, destroyed	150
Chicago, Ill.—Golf Ball, Inc., plant, damaged	50
Louisville, Ky.—Felt high school, destroyed	50
Cooperstown, N. Y.—Elsworth and Sil Department store, destroyed	60
Bristol, Va.—Business establishments, destroyed	180
Cordelle, Ga.—East Crisp high school, destroyed	50
Chicago, Ill.—Business building, destroyed	135
Chicago, Ill.—Business building, damaged	50
Vandalia, Ill.—Fraternal lodge rooms and theatre	70
Indianapolis, Ind.—Oil refining plant, destroyed	60
Port Huron, Mich.—Business stores, damaged	50
Louisiana, Mo.—Business buildings, destroyed	80
Sharon, Pa.—Westinghouse transformers, destroyed	50

Retirement Pay Revised

The Charlotte, N. C., Firemen's Association is making plans for a new retirement system, the ideas being included in a bill to be presented to the county's delegation in the General Assembly at Raleigh. The proposed plan was discussed by the Charlotte Firemen's Association at meetings held in Charlotte recently.

Under the present system, the man who retires at the end of five or ten years receives the same amount as the one serving the full thirty years. The new system places the amount that each one receives on the basis of a sliding scale which takes into consideration the number of years worked as well as the salary received. Under no circumstances would the retirement pay exceed $100 a month. Payments into the fund will continue as in the past, that is, three per cent of each man's salary a month.

D. G. SPENCER.

New York Firemen Study Gases and Incendiaries

A course of instruction designed to protect the people and property of New York City from fire and attacks from enemy invaders began recently for the 10,300 members of the New York City Fire Department. Seventy-five chiefs and captains were the first students of the course. The lower ranking men will take the course later on so that they will be in a position to pass the information on to the public should an emergency arise.

The course which is divided into two days of lecture and three days of laboratory work, embodies a thorough study of various types of poisonous gases and incendiary materials. In the laboratory section the firemen work with the gases and combustibles. Fire Commissioner J. J. McElligott has had personal charge of the research and preparation of this course for the past two years.

J. T. Ryan Dead

J. T. Ryan, President of Mine Safety Appliance Company, Pittsburgh, Pa., died on February 20 in Miami, Fla., at the age of fifty-seven years.

Mr. Ryan was a native of Huntingdon County, Pa., and graduated from Penn State College in 1908 with a degree in Mining Engineering. From 1911 to 1914, he was in charge of the mine rescue and safety, and mine lamp testing division of the United States Bureau of Mines. In 1914, he and George H. Deike of Pittsburgh founded the Mine Safety Appliance Company which is said to be one of the largest manufacturing concerns of mining and industrial safety equipment in the country. In 1915, Mr. Ryan worked with T. A. Edison in the inventor's laboratory in New Jersey, on the design and development of the Edison Safety Cap Lamp, which is so universally used today in underground coal and metal mines.

In 1934, he was given the degree of Honorary Engineer of Mines by Pennsylvania State College. He was a member of numerous mining institutes and associations.

Firemen Study Incendiary Fires

At a recent meeting of the Vermont State Firemen's Association, more than 100 members who were present were advised of the necessity of acquainting themselves with the latest methods for fighting fires in war time as well as during times of peace. A 750-gallon trailer pump was demonstrated which may be used in connection with a hydrant, cistern pond, or other source of water supply.

New York Firemen Don Various Types of Gas Masks as Part of Their Special Training

Chief Cornoyer Awarded Medal

Chief Lawrence C. Cornoyer of the St. Louis, Mo., Fire Department recently received a gold medal from the Insurance Board of St. Louis for meritorious service performed in 1940.

The medal was given at the board's annual dinner at which the Chief and Mrs. Cornoyer were guests of honor.

Chief L. C. Cornoyer

A similar presentation will be made each year to the most outstanding member of the fire department, John J. O'Toole, insurance executive announced.

Appointed October 13, 1938, to succeed the late O'Boyle as head of the fire department, Chief Cornoyer increased the efficiency of the force by installing a two-way radio system in his official car which enables him to keep in immediate touch with the fire alarm office in City Hall and to direct equipment to any point in the city at a moment's notice.

He was also instrumental in arranging for the recent purchase by the city of $75,980 worth of new equipment including six combined pumping and hose trucks and a 100-foot aerial ladder truck.

In 1940, the department under his direction rescued 125 persons from burning buildings as compared with seventy-seven saved the year before. Four residents and one fireman died as a result of burns.

When sparks from electric drills used by repairmen set a huge steel gas storage tank ablaze in South St. Louis in June, the Chief climbed on the structure, directed operations and saw to it that enough water was directed over the steel plates to prevent their buckling while the inflammable gas was pumped off. Streets were cleared and crowds held back for two hours for fear of an explosion.

Since the first of the year, Chief Cornoyer, in cooperation with the Federal Bureau of Investigation, has mapped out a detailed program for the prevention of sabotage at plants in the city engaged in national defense work.

Inspections of all defense plants have been made by Deputy Fire Chiefs and Lieutenants, the location of fire plugs, and the best means of approach to factory buildings noted. Firemen are required to familiarize themselves with details of buildings used under government contracts in their districts, and the need for new fire plugs or alarm boxes is being checked.

He joined the department in 1907, and was made a Lieutenant in 1920 after he led a class of 450 privates in competitive examination. Three years later, top ranking in an examination of forty lieutenants led to his promotion to Captain. Mayor Bernard F. Dickmann appointed him Deputy Chief in 1933.

Extinguisher Association Elects Officers

At the annual meeting of the Chemical Fire Extinguisher Association held at the Knickerbocker Hotel, Chicago, Ill., the following officers were elected:

President, Everett A. Warren, General Fire Truck Corporation, Detroit, Mich.; Vice-President, J. O. Binford, American LaFrance-Foamite Corporation, Elmira, N. Y.; Treasurer, C. H. Stephens, Buffalo Fire Appliance Corporation, Buffalo, N. Y.; and Directors, J. O. Binford, R. C. Iddings, The Fyr-Fyter Company, Dayton, Ohio, C. H. Stephens, E. A. Warren, and E. G. Weed, Pyrene Manufacturing Company, Newark, N. J.

Gas and Smoke Fells Fifty

Two alarms were required to extinguish a stubborn blaze in the Wholesale Electric Company, New York City, the fire being confined to the fourth floor of the six-story building. The fire, fed by large quantities of oil, excelsior and insulating material, produced four kinds of dangerous gases, one being phosgene, a lethal gas used during the last World War. At least fifty firemen required treatment for smoke and gas poisoning, eighteen of whom required inhalator treatment. Two men had to be removed to the Bellevue Hospital.

Those suffering from smoke and gas exposure were treated at the scene using a new piece of equipment known as the "poison bag." Those using it were reported to have been relieved quickly.

Flooring Fire Brings Two Alarms

Fifteen firemen, a Lieutenant, and Battalion Chief Noonan, all from the New York Fire Department, were overcome by heavy billows of smoke that poured out of the cellar of the Garage and Auto Sales Agency in New York City as a result of a fire which occurred early in January.

Photo, Courtesy Bill Herries

Fire Fighters Being Revived After Taking Too Great a Dose of Smoke

Shortly after the first alarm apparatus arrived, the fire was discovered to be in the "under-wood flooring." Firemen struggled in the cellar to open up and ventilate, but the fire and smoke became steadily worse. After about fifteen minutes, with the smoke getting heavier and the increasing possibility of the fire spreading, a second alarm was turned in. It took several hours before the fire was brought under control.

Doctors Archer and Stillman arrived on the scene and took care of those overcome.

BILL HERRIES

Doctors, Firemen and Policemen Administer Inhalator Treatment to Firemen Felled by Gas and Smoke

CONNECTICUT PLANTS READY TO COPE WITH "MADE FIRES"

Munitions Factories and Other Industries Organize Men to Cope With Sabotage and Arson

By Thomas F. Magner

CONNECTICUT, munitions center of the United States and termed "The Essen of America" during the last World war, is taking every known precaution against sabotage and fires of suspicious origin in its hundreds of industrial plants. During the coming months, with hundreds of additional workers engaged in the manufacture of war material, fires will occur due principally to the upturn in production.

Concentration of Industries

At Bridgeport, New Haven, and Hartford, the state's three largest cities, are located the plants which, brought about by national defense business, are employing the most number of men and women. For obvious reasons the names of these plants are not incorporated in this article. A Chamber of Commerce survey in one city in the southern part of the state revealed a weekly average payroll for December, 1940, of $1,706,618.

Industrial employment figures for the same months showed a mark of 43,136, a gain of 7,010 over the same month in 1939, and a new high since World War days. In citing these employment figures the purpose is to show what fire department officials know is the ultimate result: Where more help is employed, and production increases, there is always the possibility of more fires.

This view is based on the fact that many, at least, of the industries of the United States are, or soon will be, engaged in the manufacture of war materials, large and small. Two of the largest plants devoted to the manufacture of arms and ammunition are located in Connecticut. Also in this state can be found two world-famous aeroplane motor factories. This is but a little of what Connecticut is doing at the moment.

And all plants and buildings must be protected against sabotage and incendiarism. This involves, in nearly every case, uniformed guards, working in three shifts, at all plant gates. At Bridgeport, where war materials are being manufactured, none other than employees are allowed to pass through gates without identification.

Badges for Employees

All employees, at one of the larger factories, wear their photograph on a coat badge and are refused admittance to work unless the photobadge is displayed. This order includes the superintendent, general manager and the president of the firm. Guards have power of arrest, being special police officers.

"We are spending an enormous amount of money to prevent a fire in our factory," one munitions factory official told the writer recently. "This involves, in nearly every case, changes in buildings, equipment, processes and materials. Also the training of new employees and, to a certain extent, of the present working force, as well, and a general disruption and alteration of accustomed procedure, all of which will tend to increase the likelihood of accidental fires.

"The danger of arson or incendiarism must be reckoned with because, for the purpose of sabotage, paid agents of unfriendly foreign governments, and members of various 'subversive elements' existing in this country today, will try to secure employment in our industrial plants.

"However, with constant altertness and intelligently planned procedure on the part of industrial managers, many fires may be prevented which otherwise would result from the mistakes of well-intentioned employees as well as from the deliberate action of malicious persons.

"The prevention and extinguishment of accidental fires in the immediate futre will be accomplished not so much by discovering and applying new fire-fighting methods and equipment as by making more intensive and extensive use of existing knowledge and facilities.

"It so happens that our Chief Guard at the plant is a volunteer fireman of many years and attached to one of the companies in his town. As head of our factory fire force he has given considerable time to the instruction of employees.

Fire drills are held weekly, conditions are checked throughout the several buildings on the number and location of fire extinguishers, standpipes, auxiliary fire alarm boxes and other devices.

"Certain dangers that, heretofore have been confined to specific industries and operations, now tend to become spread about rather generally."

If the problem of eliminating these special hazards has been solved in the Connecticut factories, the same successful methods can be employed elsewhere. Under normal conditions incendiarism is responsible for a portion of our country's annual fire loss. Under present conditions it is becoming a far more serious menace and one which every fire official must watch diligently.

The arsonist tries not only to create conditions favorable for a disasterous fire but also, as far as possible, will try to make the fire extinguishing equipment ineffective. His efforts are greatly handicapped, however, by the presence of automatic burglar alarms, fire alarms, and sprinkler systems under efficient A.D.T. Company "fool-proof" control, which give instant warning of unauthorized entrance to a client's plant or in the event of malicious tampering of the system.

Connecticut fire and police officials learned much in the first World war about the inner workings of subversive influences and how to cope with them. Edward J. Hickey, Commissioner of the State Police Department, was himself an operator for the Department of Justice in Connecticut during the entire World War period. Months ago, Commissioner Hickey mobilized the state's 1,400 industries and led the nation in this respect. The work of "checking up" the state for protection against sabotage and malicious plant fires has the full cooperation of police, fire, military, and all other state departments and its municipalities, in connection with the industrial plant protection organizations.

These Are the Men Who Will Enforce Law and Order at One Industrial Plant in Connecticut
Guards being sworn in as special policemen to curb saboteurs and sympathizers of foreign governments.

British Firemen Ask for Gloves

A request for 10,000 pairs of asbestos gloves to lessen injuries among civilian firemen has been made to the British War Relief Society in New York City from London. The president of that organization, Winthrop W. Aldrich said that the gloves would be sent as soon as delivery was made. He pointed out that the fulfilling of this request was justifiable in view of American aid to Britain because the loss of a civilian fighter even for just a day is a serious loss.

GAS EXPLOSION KILLS SEVEN PERSONS AT TOPPENISH, WASH.

Blast Caused by Broken Gas Line Pulled Apart by Grader Working Near Building—Hot Stove Causes Fire

SEVEN persons were killed by a gas explosion which leveled the Richey and Gilbert Company building in Toppenish, Wash., when they were buried under a mass of debris after the blast. Fourteen persons were injured in the explosion, but managed to escape or were rescued by members of the Toppenish and Zillah fire departments, and by spectators who volunteered.

The explosion occurred about 11:20 a.m. Just ten minutes before, Leo Henle, Chief of the Toppenish Fire Department was in the building checking on some electrical installations that were being put in at the time. After leaving the building, he had only gone two blocks when the explosion occurred. The Toppenish Department which responded to the first alarm ran two 2½-inch lines from a hydrant directly in front of the building and two more lines from a hydrant a block away. A bumper was used on these latter two lines. Later, the Zillah, Wash., Fire Department was called bringing a pumper, Chief C. L. Barthlow, and four men. This truck layed two more lines from a hydrant two blocks away.

Several times, while the men were working in the basement, where the main fire was located, the smoke rolled back so thickly that a fog nozzle was put into use to drive the smoke away. This nozzle was used from one of the lines off the hydrant in front of the building. Firemen had a difficult job getting through the wreckage to the seat of the fire, down under all the debris next to the basement floor.

An investigation revealed that the explosion was caused by a broken gas line which had apparently been pulled loose by a Yakima County grader working in the alley beside the building. The scarifier blades were believed to have struck the pipe and pulled it just enough to break it inside the wall of the building. The investigation indicated that the pipe was broken about ten to fifteen minutes before the explosion occurred. Somehow this accumulated gas was ignited, causing the explosion.

Chief Leo Henle stated that the fire following the explosion was probably due entirely to a coal burning stove which had a hot fire going at the time of the explosion. When he was in the building he stood by this stove, so naturally when the department arrived the Chief was sure of a resultant fire. There was no sign of a fire when the department first arrived, but it was not very long before smoke started billowing out from underneath the wreckage. The fire quickly started to spread, being fed by a large supply of tires, paints, and several barrels and cans of oil and tar paper.

Members of the department worked at the scene of the blast combing the wreckage for bodies of victims. The department and Chief Henle were praised for the manner in which the men conducted the fire fighting and rescue activities.

Views of the Fire and Wreckage Resulting from the Gas Blast in Toppenish, Wash.
Upper, clouds of smoke from the fire burning underneath the debris. Lower picture shows the extent to which the building was damaged by the blast.

Handbook of Fire Protection in New Edition

The ninth edition of the Crosby-Fiske-Forster "Handbook of Fire Protection" has just been issued. (National Fire Protection Association, $4.50.)

More than 100 men, all specialists in their respective branches of fire protection engineering, contributed in the preparation of the book. It is the accumulation of their knowledge and talents that is presented in the new 1,300-page edition of the Fire Protection Handbook. Over 1,200 illustrations are included in the book.

Each of the fifty-nine chapters has been revised to include not only new information, but also new tables, charts, diagrams and illustrations. The handbook includes information on fire losses and fire protection; laws and regulations, common hazards; heating appliances, chimneys and flues; flammable liquids; gas and internal combustion engines; protection against lightning; dust explosions; hazardous chemicals and explosives; nitrocellulose film and proxylene plastics; fire caused by occupancies; fire resistive construction; heavy timber construction; protection of openings in walls and partitions against fire; fire retardant treatments; prevention of water damage; public fire protection; public water supplies; automatic sprinkler protection; private fire organizations; salvaging operations; farm and forest fire protection; conflagration hazards and protection, and a wealth of other information.

Forest Fire Fighters

A recommendation has been made that the Massachusetts Department of Forestry and Recreation plan two schools, under field conditions, for the purpose of training fire fighters in all matters relating to detecting and fighting forest fires. It was proposed that one training school be held in the spring and another in the fall and that wardens, deputy wardens and key men be privileged to attend.

Crowley Wins Award Third Year

The Crowley, La., Fire Department received first place for the third successive year in the state of Louisiana for activities during Fire Prevention Week.

One of the Many Signs Throughout the City of Crowley

Notification of the award was made to Chief J. W. Miles by the International Judge's Committee of the National Fire Protection Association.

Chief Miles was elected to his post in 1910 and is the ranking chief in Louisiana in years of fire service. He is the oldest ranking member of the Crowley Firemen's Association.

In the contest, Baton Rouge received second place and Shreveport received honorable mention.

Motion Pictures of Fires

Information is wanted by M. O. Jegulem, Instructor of Science, High School, Proctor, Minn., about 16 mm motion pictures of fires that he can use for educational work.

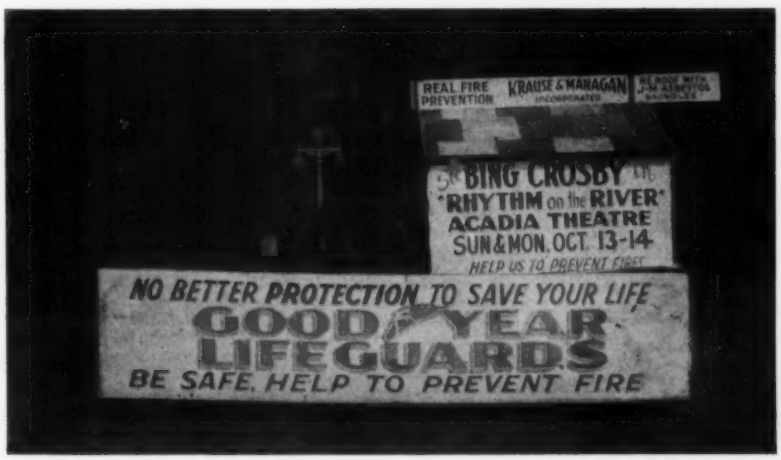
Cape Charles Holds Elections

The annual election of the Cape Charles, Va., Fire Company No. 1 was held early in January. The following men were re-elected: W. G. Blasingame, President; S. R. Ames, Vice-President; R. T. Barnes, Secretary; H. J. Wendell, Treasurer; C. R. Adkins, Chief; W. C. Morris, First Assistant Chief; W. H. Barnes, Second Assistant Chief; and W. H. Currie and F. C. Fitzhugh, Board of Directors at large.

At the present time, the fire company is working on a proposition for purchasing a "Quad." The fire company would stand half the cost and the city council would pay the balance. The present equipment consists of a 750-gallon pumper, a 500-gallon pumper and a tank wagon carrying a 500-gallon tank of water, and a 250-gallon pump.

Commissioner Reports to Department

This year, William Arthur Reilly, Fire Commissioner of Boston, Mass., inaugurated something new in the way of reports. In addition to the report to the Mayor, the Commissioner submitted a twenty-seven-page report to the 1,500 employees of the Boston Fire Department. The report summarizes the activities, improvements and changes within the department during 1940 as well as a digest of financial facts and figures.

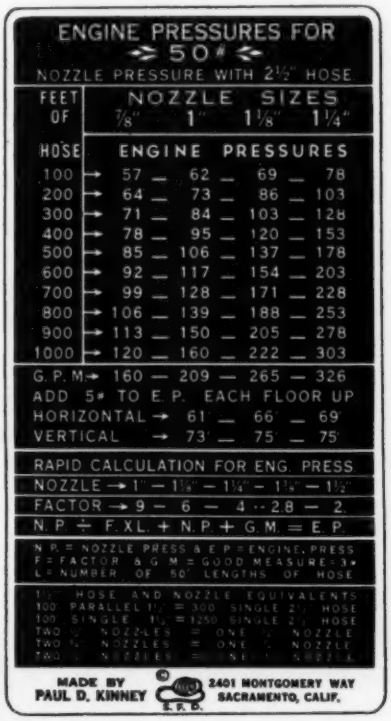


Local Business Cooperated in the Design and Construction of Floats

Pumper Pressure Chart

Realizing the need for a chart to enable firemen to determine the correct engine pressures for an effective fire stream for hand lines, Paul D. Kinney, of the Sacramento, Cal., Fire Department, has worked out such a chart which can be used very conveniently. Knowing the length of hose and the size of the nozzle used, and assuming a nozzle pressure of 50 psi, and a hose diameter of 2½-inches, the engine pressure may be instantly determined.

Should it be necessary to determine the engine pressure for other conditions of hose layout and nozzles used, the engine pressure and nozzle pressure relationship is presented along with nozzle factors and hose and nozzle equivalents. The pocket gauges are being offered at $2 each, which includes the title, name, and address of the purchaser, and they are supplied complete in leather cases. The large engine plates sell for


ENGINE PRESSURES FOR 50#
NOZZLE PRESSURE WITH 2½" HOSE

FEET OF HOSE	NOZZLE SIZES ⅞"	1"	1⅛"	1¼"
	ENGINE PRESSURES			
100 →	57	62	69	78
200 →	64	73	86	103
300 →	71	84	103	128
400 →	78	95	120	153
500 →	85	106	137	178
600 →	92	117	154	203
700 →	99	128	171	228
800 →	106	139	188	253
900 →	113	150	205	278
1000 →	120	160	222	303
G.P.M. →	160	209	265	326

ADD 5# TO E.P. EACH FLOOR UP
HORIZONTAL → 61 — 66' — 69'
VERTICAL → 73' — 75' — 75'

RAPID CALCULATION FOR ENG. PRESS.
NOZZLE → 1" — 1⅛" — 1¼" — 1⅜" — 1½"
FACTOR → 9 — 6 — 4 — 2.8 — 2.
N.P ÷ F. XL. + N.P. + G.M. = E.P.
N.P. = NOZZLE PRESS. & E.P. = ENGINE PRESS.
F = FACTOR & G.M. = GOOD MEASURE = 3#
L = NUMBER OF 50' LENGTHS OF HOSE

1½" HOSE AND NOZZLE EQUIVALENTS
100' PARALLEL 1½" = 300' SINGLE 2½" HOSE
100' SINGLE 1½" = 1250' SINGLE 2½" HOSE
TWO ⅞" NOZZLES = ONE ⅞" NOZZLE
TWO 1" NOZZLES = ONE 1" NOZZLE
TWO 1⅛" NOZZLES = ONE 1⅛" NOZZLE

MADE BY PAUL D. KINNEY — E.F.D. — 2401 MONTGOMERY WAY SACRAMENTO, CALIF.

$4, and if wanted in combination, one large and one pocket gauge is furnished for $5. Mr. Kinney is prepared to furnish plates for all sizes of hose, various tips and nozzle pressures. Anyone desiring these charts may contact Paul D. Kinney, 2401 Montgomery Way, Sacramento, Cal.

Fire From the Air

A fifty-four-page, pocket-size manual entitled "Fire From the Air—The A B C's of Incendiaries" by J. E. Zanetti, Professor of Chemistry, Columbia University, New York City, has just been published by the Columbia University Press. It deals with the construction, characteristics, use and extinguishment of incendiary bombs. The material included in the manual was used previously in a series of lectures before professional fire and police specialists. The price of the manual is fifty cents.

Captain Dooling Named Asst. Chief

Captain C. F. Dooling, a member of the Beverly, Mass., Fire Department for the past seventeen years, was named Assistant Chief at Camp Edwards. He placed third in the state-wide Federal Civil Service Examination held last November. If Captain Dooling accepts, he will apply for an indefinite leave of absence from the Beverly Department, which, in all probability, will be granted to him in view of his appointment being a part of the National Defense program.

Fire Controlled by Flat Sprays

During the past three years, the Indianapolis, Ind., Fire Department has been experimenting with a new type of flat spray with hydraulic diffusion. The results of the tests showed that these

The Flat Spray in Operation

sprays were successful in many types of fire control, including magnesium alloys, all types of volatiles, and grass fires of very large area.

Contrary to past beliefs concerning the use of water on magnesium alloy fires, this flat spray has proven its worth in controlling the fire and preventing explosions. When used on such a fire, the spray tends to exclude most of the oxygen, thus causing a crust to form over the burning magnesium. This further prevents the inclusion of oxygen. Finally, the fire becomes just a smouldering mass, with little dissipation of heat. Because of the finely diffused nature of the stream, it extinguishes by suffocation.

C. Gregory,
Battalion Chief, Indianapolis.

True Love Saves a Life

It was the custom for Fireman Tommy Arnold of the Toronto, Ont., Fire Department always to telephone his lady friend at night, when he was on duty, before turning in. Recently, the custom resulted in saving her life.

At that time, she felt dizzy and reached the telephone with difficulty. When Tommy spoke, she shouted, "Tommy, help! It's gas." She fell unconcious on the floor.

In a few minutes firemen responded with an inhalator and they worked over the victim for more than two hours. Several doctors were also on hand.

This was the second time that Tommy saved the lady's life. The other was when he was a life guard attached to the Lombard Street Station.

John Karl Lee

Success Attributed to Quick Response

The Cape Charles, Va., Fire Company 1, under Chief C. R. Adkins, claims that much of their success in extinguishing fire lies in the fact that their response to alarms is rapid enough to prevent the fire getting much of a head start. A number of the members of the company live within a block of headquarters and answer all alarms promptly. The company is entirely volunteer with no one on duty at headquarters at any time.

Extent of the Farm House Fire Damage

Early in February, an alarm was received about 12:30 a. m. and within two minutes, one combination pumper with a booster was dispatched, closely followed by a 500-gallon tank truck with a 250-gallon pump. The fire involved a farm house located ten or eleven miles from Cape Charles.

Evidence showed that the house had been broken into and then a fire built under the edge of the house, using stove wood and kerosene. The extent of the fire was limited to the floor of the kitchen and up through the wall to the roof. This is just one of a good number of rural homes that have been saved by rapid responses.

Chief J. H. Monroe Dead

J. H. Monroe, Fire Chief Emeritus of the Savannah, Ga., Fire Department, died February 6 in a local hospital after an illness of several months.

He had been a member of the department for thirty-one years, serving as Chief for the twenty-three years. A little over a month ago he was retired, and in recognition of his many years of valued service, he was voted the title of Chief Emeritus.

He joined the department in 1900, at a period when horse drawn equipment was ultra-modern, and since then he has watched the Savannah Department become one of the first of the completely motorized departments.

He became department head in 1913, and during the following years up to the time of his illness, he was continually working to awaken the public to fire prevention methods. Under his leadership Savannah won first place during Fire Prevention Week in 1932 for Georgia.

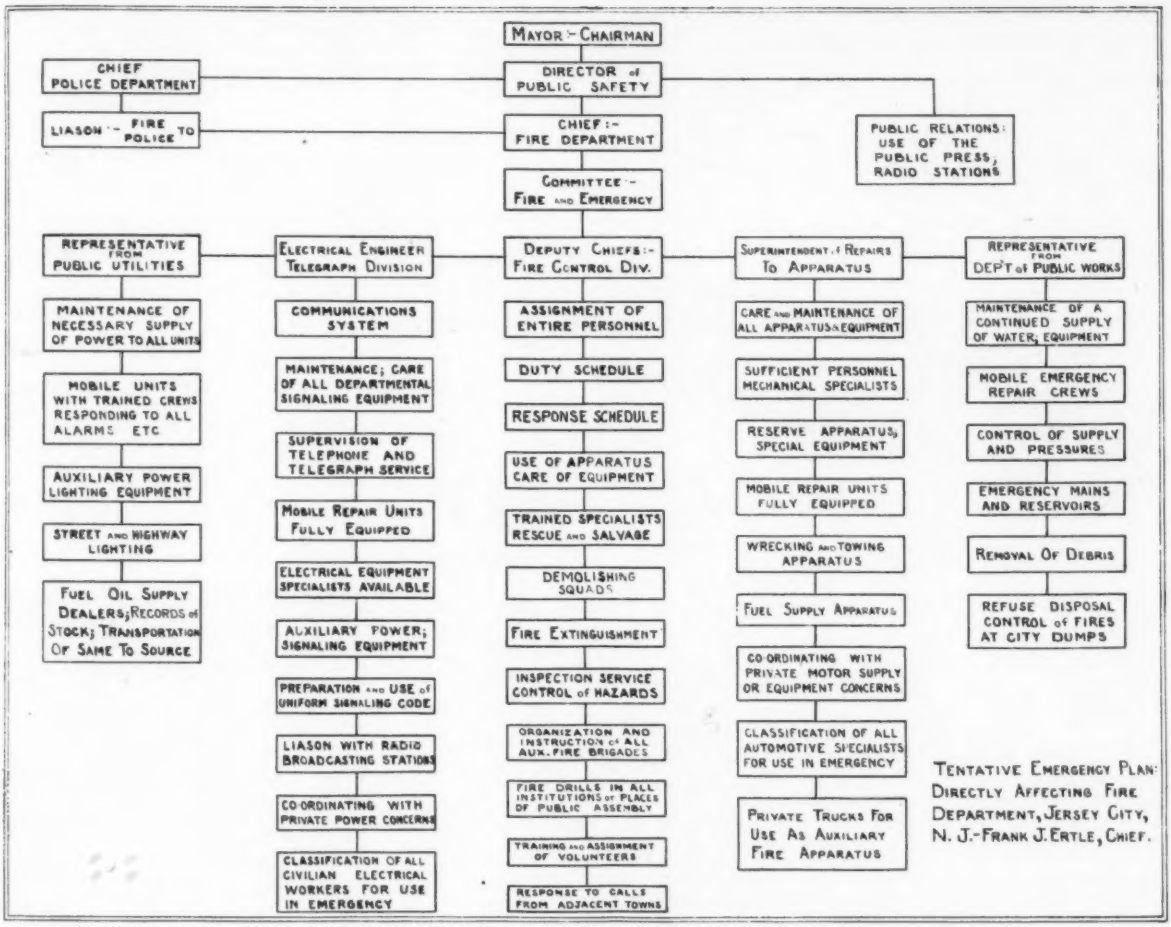
He was President of the Southeastern Section of the Association of Fire Chiefs in 1931.

Building Men Study Fire Fighting

More than 8,000 building superintendents are already listed and another 5,000 are being catalogued as prospective students in a course prepared by the Division of Fire Prevention of the New York City Fire Department to train all building superintendents in the city in the basic principles of fire fighting and panic prevention. The course will cover emergencies arising from routine fires to bombing attacks.

It was suggested that each superintendent organize the staff that he heads into a volunteer fire brigade with each member of the brigade receiving training in his duties. It was pointed out that with an average staff of five men under each superintendent listed, quite a sizable fire fighting force would be available in emergencies.

New Apparatus for Memphis, Tenn.
In addition to these new Peter Pirsch 1,000-gallon pumpers which were delivered to Memphis recently, delivery of a 1,500-gallon American-LaFrance pumper is expected soon. These pumpers will soon go into service replacing some of the older apparatus which will be held in reserve.


MAYOR :- CHAIRMAN
CHIEF POLICE DEPARTMENT
DIRECTOR of PUBLIC SAFETY
LIASON :- FIRE TO POLICE
CHIEF :- FIRE DEPARTMENT
PUBLIC RELATIONS: USE OF THE PUBLIC PRESS, RADIO STATIONS
COMMITTEE :- FIRE AND EMERGENCY
REPRESENTATIVE FROM PUBLIC UTILITIES
ELECTRICAL ENGINEER TELEGRAPH DIVISION
DEPUTY CHIEFS :- FIRE CONTROL DIV.
SUPERINTENDENT of REPAIRS TO APPARATUS
REPRESENTATIVE FROM DEPT of PUBLIC WORKS
MAINTENANCE OF NECESSARY SUPPLY OF POWER TO ALL UNITS
COMMUNICATIONS SYSTEM
ASSIGNMENT OF ENTIRE PERSONNEL
CARE AND MAINTENANCE OF ALL APPARATUS & EQUIPMENT
MAINTENANCE OF A CONTINUED SUPPLY OF WATER, EQUIPMENT
MOBILE UNITS WITH TRAINED CREWS RESPONDING TO ALL ALARMS ETC
MAINTENANCE; CARE OF ALL DEPARTMENTAL SIGNALING EQUIPMENT
DUTY SCHEDULE
SUFFICIENT PERSONNEL MECHANICAL SPECIALISTS
MOBILE EMERGENCY REPAIR CREWS
AUXILIARY POWER LIGHTING EQUIPMENT
SUPERVISION OF TELEPHONE AND TELEGRAPH SERVICE
RESPONSE SCHEDULE
RESERVE APPARATUS, SPECIAL EQUIPMENT
CONTROL OF SUPPLY AND PRESSURES
STREET AND HIGHWAY LIGHTING
MOBILE REPAIR UNITS FULLY EQUIPPED
USE OF APPARATUS CARE OF EQUIPMENT
MOBILE REPAIR UNITS FULLY EQUIPPED
EMERGENCY MAINS AND RESERVOIRS
FUEL OIL SUPPLY DEALERS; RECORDS of STOCK; TRANSPORTATION OF SAME TO SOURCE
ELECTRICAL EQUIPMENT SPECIALISTS AVAILABLE
TRAINED SPECIALISTS RESCUE AND SALVAGE
WRECKING AND TOWING APPARATUS
REMOVAL OF DEBRIS
DEMOLISHING SQUADS
FUEL SUPPLY APPARATUS
AUXILIARY POWER; SIGNALING EQUIPMENT
FIRE EXTINGUISHMENT
REFUSE DISPOSAL CONTROL of FIRES AT CITY DUMPS
INSPECTION SERVICE CONTROL of HAZARDS
CO-ORDINATING WITH PRIVATE MOTOR SUPPLY OR EQUIPMENT CONCERNS
PREPARATION AND USE of UNIFORM SIGNALING CODE
ORGANIZATION AND INSTRUCTION of ALL AUX. FIRE BRIGADES
CLASSIFICATION OF ALL AUTOMOTIVE SPECIALISTS FOR USE IN EMERGENCY
LIASON WITH RADIO BROADCASTING STATIONS
FIRE DRILLS IN ALL INSTITUTIONS or PLACES OF PUBLIC ASSEMBLY
CO-ORDINATING WITH PRIVATE POWER CONCERNS
PRIVATE TRUCKS FOR USE AS AUXILIARY FIRE APPARATUS
TRAINING AND ASSIGNMENT OF VOLUNTEERS
CLASSIFICATION OF ALL CIVILIAN ELECTRICAL WORKERS FOR USE IN EMERGENCY
RESPONSE TO CALLS FROM ADJACENT TOWNS
TENTATIVE EMERGENCY PLAN DIRECTLY AFFECTING FIRE DEPARTMENT, JERSEY CITY, N. J.- FRANK J. ERTLE, CHIEF.

Tentative Emergency Plan Adopted for the Jersey City, N. J., Fire Department

This organizational chart has been formulated for the Jersey City Fire Department in the event of an emergency situation arising. The plan has been discussed by many of the Chiefs of Hudson County, N. J., and they are of the opinion that it may have some features of merit.

F. W. Beardslee Out of Hospital

Friends of F. W. Beardslee, sales manager of Fire Apparatus Division, Mack Manufacturing Company, will be pleased to hear that he is now well on the mend after undergoing an operation. He was discharged from the hospital last week after spending three weeks therein.

Fire College Location Changed

Queens, instead of Brooklyn, has been designated as the site of the proposed $1,300,000 New York City Fire College. The city now leases a building in Long Island City, Queens, and has been planning to put up a building of its own. The reason for the change in sites was the fact that the Queens' site is more convenient than the one in Brooklyn. No date has been set for the beginning of construction.

A New Truck for the Truro, Nova Scotia, Department

This new eight-man, cab-over-engine truck was installed in Truro, N. S., a short time ago. Equipment carried on the truck includes 1,500 feet of 2½-inch hose, 400 feet of one-inch hose, a 200-gallon booster tank, one fifteen-foot roof ladder, a twenty-eight-foot wall extension ladder, two lengths of 2½-inch suction hose, a 200-gallon pump, and numerous other pieces of equipment which are carried in seven compartments having automatic lights.

Firemen Active in Community Service

A member and past President of the Townsend Club 1 in DeKalb, Ill., has chosen as his hobby the passing out of wheel chairs to invalids who are badly in need of them. The members of the DeKalb Fire Department, being more than interested in this work, have been repairing the chairs, and they have agreed to carry on the work of distributing the chairs should anything happen to the man who started this community service.

New York City Fire Losses Higher

A report by New York City's Fire Commissioner, J. J. McElligott, revealed that the city's fire loss in 1940 totalled $9,637,375, an increase of $1,036,831 over 1939. Despite this increase, there was a decrease of over 4,000 fires in 1940 below 1939. The per capita fire loss was higher in 1940, being $1.29, compared to $1.14 in 1939.

Manufacturers' Announcements

Hux-A-Mat

Announcement has been made by the Walter C. Huxel & Co., 230 East Front Street, Cincinnati, Ohio, in a folder just published, of a light weight, portable stretcher known as the Hux-A-Mat "Fold-N-Bag" Stretcher. This new stretcher is seven feet long, twenty-five inches long and weighs twelve pounds. It may be rolled quickly into a waterproof canvas carrying bag.

Hux-A-Mat Fold-N-Bag Stretcher

Every stretcher has snapped to its heavy-duty canvas bed a rubber blanket and a wool blanket so as to prevent victims placed on it from suffering from cold and dampness. The stretcher has no stiff poles to become wedged between door jams, narrow hallways or around curved staircases. Instead, three rope handholds are arranged, three on each side, and one at each end. The elimination of the rigid poles enables a patient to be carried in a position dictated by the type of injury that he has received.

Emergency Master-Light

A new Type J2 master-light has been announced by the Carpenter Manufacturing Company, 179 Sidney Street, Cambridge, Mass. This portable hand unit uses two No. 6 telephone type dry cells, encased in aluminum castings with an aluminum handle. There is a bracket suitable for mounting on walls or cars. The light is said to be especially suitable for fire departments and for emergency lighting needs. Its weight is ten pounds with batteries.

Type J2 Master-Light

Chief M. J. Hayden Honored

Firemen, city officials and friends of Chief Martin J. Hayden, newly appointed Chief of the Bridgeport, Conn., Fire Department, attended a testimonial dinner given in his honor at Eichner's Restaurant, Bridgeport, on February 6.

More than 300 men applauded the city's new Chief as he was escorted into the spacious dining hall by Asst. Chief Arthur T. Platt. Chief Hayden was praised by a series of speakers who congratulated him for attaining by merit the highest office in the Department.

Following the dinner, George Wellington, President of the Board of Fire Commissioners, presented Chief Hayden with a smoking set and an overstuffed chair in behalf of the Fire Department members. A leather bill fold was presented to the Chief by Rev. James H. Killian, Chaplain of the Fire Department.

Praising the Department's past record for comparatively small fire losses, Mayor Jasper McLevy said that he felt assured that the record would be maintained by Chief Hayden. Asst. Chief Stanley Sherwood was Chairman of the Committee on arrangements for the dinner. Frank J. Brennan, former Bridgeport Fire Commissioner, was toastmaster.

THOMAS F. MANGER.

New Association Organized

A new organization, in the northwestern section of Illinois, The Quad County Blackhawk Fire Fighters Association has been organized at Polo, Ill., and the following men elected officers: Chief Connel Nicol, Sterling, President; Chief H. A. Hersey, Savanna, Vice-President; Chief B. E. Haas, Oregon, Secretary; and Firemen Mart Schryver, Jr., Polo, Treasurer. Meetings are held every six weeks with the cities that are members taking turns in sponsoring the meetings. The next meeting will be held April 3 in Milledgeville, Ill.

The association was formed as a non-profit, educational organization to promote fire protection and prevention, to obtain and circulate information on these subjects, and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire.

Retired Fireman Maintains Home Protection

In many northern communities, fire equipment is often delayed due to storms, snow, and sleet. With this fact in mind, James B. Henley, a retired fireman has provided himself with an outfit which is convenient for the immediate use by those in the home, or by volunteer firemen who may arrive at the fired building ahead of the equipment.

The home fire protection unit consists of 75 feet of ¾-inch garden hose with a shut-off nozzle, a well sharpened axe, a coat and hat, with mitts and ear laps in the coat pockets, and a pair of bunker boots with sox and wool pants. The hose is attached to a water pipe in the basement, and the length of hose used will enable the user to reach any part of a six-room home from the inside, this includes the attic and the roof. If on a farm with no water pressure, a couple of good fire extinguishers could be used instead of the hose.

Home Protection Unit Stands Ready for Instantaneous Use

Dangers and Hazards of Gases

A small booklet, "Dangers and Health Hazards of Fire Gases," by Harold Joe Davis, has just come off the press. This sixteen-page booklet (twelve pages of text) explains which materials, chemicals, and gases give off deadly fire gases while burning; what toxic gases each give off; their effect on the human body; and safeguards for each. The booklet may be purchased from the author, Harold Joe Davis, 3927 East Admiral Place, Tulsa, Okla., for twenty-five cents.

FALSE ALARMS

"That's the third time he has started up again, he just hates to put the blonde down!"

DOWN AND OUT

The following, an adaptation from the *Houghton Line*, purports to be a report from a "rookie" to his commanding officer detailing the reasons for an overstay in his vacation leave:

Sept. 7, I left the station on ten days leave for my brother's farm in Cobblerock, Ark.

Sept. 10, my brother's barn burned down all except the brick silo which was damaged at the top by the bolt of lightning which started the fire.

Sept. 11, he decided to repair the silo right away because he had to get his corn in it. I was going to help him.

I rigged a barrel hoist to the top of the silo so that the necessary bricks could be hoisted to the top of the silo where the repair work was.

After we got the repair work done, there was quite a pile of extra bricks at the top of the silo on the working platform we had built. I said I would take it all down below. So I climbed down the ladder and hauled the barrel all the way up. Then I secured the line with sort of a slip knot so I could undo it easier later.

Then I climbed back up the ladder and piled bricks into the barrel until it was full.

I climbed back down the ladder. Then I untied the line to let the bricks down. However, I found the barrel of bricks heavier than I was and when the barrel started down, I started up. I thought of letting go, but by that time I was so far up I thought it would be safer to hang on.

Half way up, the barrel hit me on the shoulder pretty hard, but I still hung on.

I was going pretty fast at the top and bumped my head. My fingers also got pinched in the pulley block. However, at the same time the barrel hit the ground and the bottom fell out of it, letting all the bricks out.

I was then heavier than the barrel and started down again. I got burned on the leg by the other rope as I went down until I met the barrel again which went by faster than before and took the skin off my shins.

I guess I landed pretty hard on the pile of bricks because at that time I lost my presence of mind and let go of the line and the barrel came down and hit me squarely on the head.

The doctor wouldn't let me start back to the station until September 16, which made me two days overleave, which I don't think is too much under the circumstances.

Smokey's son: "Father, is water works all one word, or do you spell it with a hydrant?"

DEFINITIONS

A "recession" is a period in which you tighten up your belt.

A "depression" is a time in which you have no belt to tighten.

When you have no pants to hold up, it's a "panic."

Many a girl with a negative personality has been developed in a dark room.

WHY WARN HIM

Visiting Chief Jones was sitting with his wife behind a palm on a Florida hotel veranda one night when a young man and his girl sat down on a bench near them. The young man began to tell the girl how pretty and good and lovable he thought she was.

Hidden behind the palms, Mrs. Jones whispered to her husband,

"Oh, John, he doesn't know we're here and he's going to propose. Whistle to warn him."

"What for?" said Jones. "Nobody whistled to warn me."

"We finally caught the fire bug—He's locked up in back there!"

Sabotage Through Fires

(*Continued from page* 123)

nicipal firemen must be prepared to handle alarms from different sections of the city.

Now let us turn to another type of sabotage, arson itself. How will the arsonist get into plants where federal defense contracts are under way? We must not only check vulnerable spots, but consider every possible method by which instruments of arson might be introduced.

Incendiary Pencil Used

Remember, the arsonist can carry in the necessary implements of fire in very compact and easily hidden form. In the last war, the favorite method was the incendiary pencil or fountain pen composed of two sections filled with acid, separated by a thin metal partition. When the latter is eaten through by chemical action, the acids mix and a fire results. Its starting action can be timed accurately hours in advance. The thickness of the partition governs the starting time, which makes it especially easy to divert suspicion, making the fire look entirely accidental, since it occurs in the dead of night when nobody would appear to be in the plant to deliberately set it.

We should consider the possibility of having instruments of destruction taken into plants in lunch boxes, packages, parked automobiles or trucks, or sent in in shipments as merchandise, such as happened in the Wall Street explosion when a wagon bearing explosives was driven down to the proper spot and set off.

Within the plant, the disloyal worker has many possibilities for sabotage. He can cause inflammable liquids to be spilled on the floor, where a terrific fire hazard is created. He can cause spontaneous combustion, which is devastating whether accidental or deliberate. He can cause electrical short circuits which start fires. He can cause machinery or boilers to overheat until the point of protection is passed and fire results. He can cause numerous accidents, covered up by his work, but which accomplish the purpose he seeks of interfering with the vital defense program.

Explosion Machine

Allied to the threat of fire is another threat of the saboteur, the infernal explosion machine, a dangerous and delicate problem. Many things have been said about the correct method of handling bombs and infernal machines. There is no correct method. Many people have been killed trying to find one. When a suspicious package of any sort is reported in your plant, the first consideration should be the protection of human life. Bombs and infernal machines cannot be handled by any formula. They are made by crackpots and you do not know their plan; they are likely to go off when least expected. The only safe rule is to leave them alone until all the people in the area can be cleared out. They should, if possible, be destroyed *where they are* either by rifle fire or by setting fire to them.

This brings up the question of property damage which may be so great that you hesitate to take this action. Sometimes they must be moved in view of their surroundings. Sandbag barricades will, however, do a great deal to lesson the force of the explosion. You can also guide the force of the explosion in a direction where damage will be held to a minimum. Another thing to be considered before destroying them where they are, is the possible damage which may occur to power lines, water lines, and steam lines.

Motor Oil to Disable Bombs

The usual advice on how to disable such bombs is to put them in a barrel of motor oil. The most recent advice is that light fuel oil is better than motor oil. We have no disagreement, but we raise this question: Who is going to put it in the oil? A bomb should never be handled unless human life is in danger. Only two or three cases are necessary to prove this point. In Milwaukee twenty years ago, a bomb was found and carried into the police station, where it remained for several hours. Just at the time the shifts were changing the sergeant at the desk said "If you want some experience handling bombs, there is one in the property room. Take a look at it." Eleven were killed when the bomb went off.

A bomb was discovered in the post office of a city in eastern Pennsylvania, and officials correctly sent for a bomb expert having special implements and equipment. His principal piece of equipment was an armored steel shield which he placed before him. It had a periscope device to enable him to peer over the top and manipulators for handling the bomb. In spite of these precautions the bomb went off and drove the shield against the wall, crushing him to death.

A bomb was found in the British Pavilion at the New York World's Fair last summer. It later turned out to contain a clock mechanism. The bomb was known to have been there thirty-six hours before it finally went off. The police had heroically carried it out to save human life. Bomb experts had previously believed that twenty-four hours was the limit for a clock mechanism bomb, and that after that it could be handled safely.

Crackpot Designs

There are two types of infernal machines, the time bomb actuated by clock mechanism or by clock mechanism or by acid eating through partitions, and the trigger bomb discharged by disturbance of the trigger in any of many different ways; by undoing the string, lifting off the lid, even picking it up off the floor and thereby releasing weights. But these machines are all made by crackpots, and you cannot forecast what is going to happen. If you can get them into oil, particularly light fuel oil, which will disable the clock mechanism and stop the clock, explosion will not take place.

Now after considering some of these possibilities, let us deal briefly with some preventive measures. I am going to step aside from the technical procedure and deal more with organization. First of all, the President's new Fire Defense Committee of the National Defense Advisory Commission is to get together all the fire prevention and fire fighting organizations and weld them into one unit for systematic procedure. If you belong to a municipal, city or county organization, you should take your problems to that organization. They will undoubtedly get in touch with you, but do not hesitate to consult them first.

In a private organization, or in a private factory, if you want to know how to play your part, my best suggestion is to get in touch with your local public fire fighting organization. See the Chief of the Department. He will be more than happy to make a survey of your particular problem and tackle it in a particular way. We cannot all do the things we would like to do, but we can usually make a practical compromise.

Industrial Plants Surveyed

The Federal Bureau of Investigation, under the direction of the President, has made a number of surveys of manufacturing plants engaged in federal defense contracts, and attempts to point out the weak spots against sabotage, fire, espionage, theft of important plans, etc. In that connection many very vulnerable spots have been found, and we have always found manufacturers more than eager to cooperate, to seek the suggestions of the Federal Bureau of Investigation and carry them out where possible. The Federal Bureau of Investigation is not in a position technically to make detailed corrective recommendations; rather they can find the weak points and leave it to the plant's own engineers to solve the problem.

Some things are well protected. Plants, however, frequently overlook the protection of irreplaceable models and drawings from the saboteur who would steal them for purposes of his own. Plants are frequently well protected inside, but not outside. Sometimes they are not fenced; sometimes they are well fenced, but no attempt is made to control the people who enter. We are too hospitable and welcome every stranger within our gates, and give him the freedom of the plant. The selection of personnel should be most carefully considered, and the entry and exit of the personnel should also be carefully checked. If you can get the personnel interested in problems of this sort, you can, get them enthusiastic and they will frequently suggest things which you would hesitate to demand. If employees make suggestions, they will frequently inconvenience themselves to carry them out.

Many plants find it desirable to have a group of their employees specifically trained for fire prevention and fire fighting. Most of all, I would emphasize, all systems will fail unless they are followed up, checked and inspected and checked and inspected time and again, until this defense emergency is passed.

Jal Firemen Lose Truck

Firemen in Jal, N. M., were aroused early one Saturday morning to discover that the city hall housing their truck was ablaze. Unsuccessful attempts were made to rescue the new truck, which was purchased recently. The fire department from Kermit, Tex., nineteen miles south of Jal, arrived too late to save the building or truck. The department from Eunice, N. M., twenty-three miles north of Jal also responded. The fire was believed to have originated from an over-heated water heater.

Correspondence

Unusual Cause for a Fire

To the Editor:

Here is an account of an unusual cause of a fire in our city. On February 5, an alarm was received at 10:24 a.m. for a fire in a two-story mill constructed warehouse used for the storage of sash and doors.

The fire had originated on the top of an eight by eight-inch stanchion on the first floor and extended to the flooring above. The fire was extinguished with one thirty-five gallon chemical tank without a great deal of loss, possibly about $10.

However, after the overhauling, I was puzzled when trying to determine the cause. There was no heat in the building. The electric wires closest to the fire were without current, and there had been no current on in the building up to the time of the fire. After spending some time tracing down wires, I finally found the cause.

The water pipes had become frozen and the workmen had burnt paper to thaw them out. In doing so they burnt off the insulation of one wire. This wire fell across the pipe and the current, when turned on, had passed through this wire and out a ground wire which was attached to the pipe, and also to a nail in the stanchion before it passed to a ground. This had charred the wood until it was charcoal before this material finally burst into flames.

RAYMOND W. WORLEY
Captain, Ladder No. 9,
Detroit, Mich.

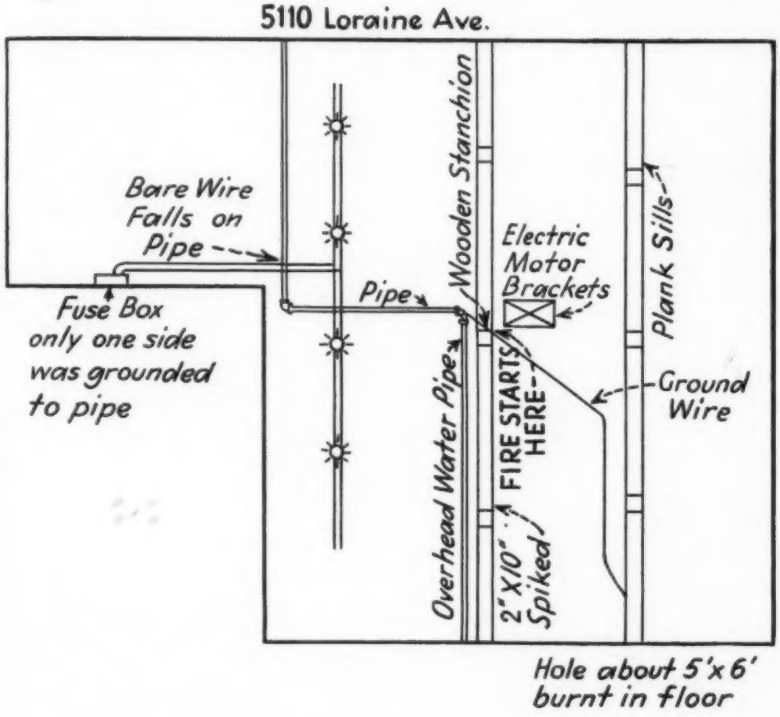


Diagram Showing the Spread of Fire

More Support for Fire Alarms

To the Editor:

I am taking advantage of your suggestion to "Just jot down anything that occurs to me." Fire alarm systems are a thing that has weighed heavily on my chest for some time and I found this an appropriate means for registering a few remarks on an important fire department service.

In a close study of various phases of fire department services and operations, it appears to me that fire communications are not receiving the support either in appropriations, research or development of methods to improve existing fire fighting facilities. Every fire department executive realizes and in most instances does not underestimate the value of a balanced relationship of fire department services. If this objective is achieved, it is naturally obvious that signalling service in the fire department must attain the same degree of proficiency as other department services, the value of the fire department is proportionately reduced if fire signalling is not properly maintained or neglected.

Too much emphasis and so much importance has been attached to water supply, mains, etc., that the other phases of fire operations have been neglected or entirely pushed in the background. It requires no great mental effort to deduce that fire department services cannot be utilized until the location of a fire is made known to the department. On numerous occasions, I have seen where flames have continued to spread due to the fact that means for calling the fire department were not immediately available.

One of the means for fire extinguishment is water. The real reason why fire departments were organized was to use appurtenances used to properly apply water to the source of fire is in fact. If the fire department arrives soon enough to apply water, then the losses are bound to be smaller. Fire statistics do not substantiate this statement. Annual losses continue to mount, which naturally leads to a more detailed analysis of our fire fighting facilities, and what is necessary to insure greater security against loss from fires.

With the means at hand, a reasonable supply of water, and a fair degree of efficiency in fire department personnel, it is reasonable to assume that municipalities can cope with practically any situation that may arise from fire. All fires at the time of origin are small. Any municipality may have huge sums invested in the finest of fire fighting facilities, but not a wheel of any apparatus will turn until the receipt of an alarm. Prompt response is essential as the time between the origin of the fire, and the announcement at headquarters will determine the extent of loss.

Apparently it is difficult to advance or sustain any sound or valid reason for this neglect in fire alarm systems, the only solution is more light on fire alarm possibilities.

Yours very truly,
J. F. HOSEMANN
Chief, Fire Department,
Vicksburg, Miss.

Chief Flynn Seeks New Station

In an annual report to city officials, Chief A. L. Flynn, of the Salem, Mass., Fire Department, who is serving his first year as Chief of the department, recommended that a new central fire station be constructed to give the Salem Willows section added fire protection. According to proposed plans, the new station would house a ladder truck. The location of the station would depend upon the success of a grade crossing elimination proposal which was also included among Chief Flynn's recommendations.

Army Guest of Firemen

Members of Rescue Fire Co., Cambridge, Maryland, recently tendered the members of Company "C" 115th Infantry an oyster supper. Company C was originally a unit of the 1st Reg., Md. Natl. Guard. The roast was held in the engine house, a steam fire engine furnishing the necessary steam for roasting. The local infantry Company left Cambridge February 21 for Fort Meade, Md.

OTIS SMITH

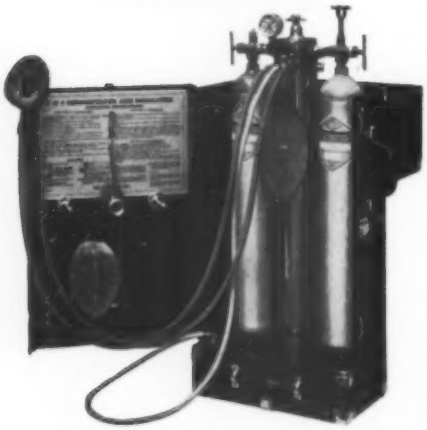
Fire Officers School in New Jersey

Rutgers University resumed the Municipal Administration Course in February, and fire officers of New Jersey attended a series of lectures on fire fighting tactics, fire prevention, and associated fire department problems.

Chief Charlesworth Re-elected

Chief Frank Charlesworth, former head of the Providence, R. I. Fire Department, and President of the Fire Chief's Club since its organization in 1927, was re-elected President at a recent meeting.

The E & J RESUSCITATOR INHALATOR and ASPIRATOR



● Standard equipment in the plants of the world's largest industrial organizations.

● Employed and recommended by leading Fire and Police Departments.

● Used and recommended by three times as many hospitals as all other makes combined.

● This successful practical application of the E & J Resuscitator in thousands of actual cases substantiates sixteen years of research and constant mechanical improvement.

● Accepted by the Council on Physical Therapy of the American Medical Associaton.

E & J Mfg. Co.

BOX 565

GLENDALE, CALIFORNIA

Drexel Bldg. . . . . Philadelphia
17 East 42nd St. . . New York City
530 Fernando St. . . . Pittsburgh
581 Boylston St. . . . . Boston
4448 W. Washington . . Chicago

The Watch Desk

(*Continued from page* 127)

pumped water through a mile of 3½-inch hose, keeping pressure at 75 lbs. . . .

* * *

Getting to Be Habit?

In Middletown, Pa., a year ago, an alarm broke up Middletown firemen's annual New Year's banquet. At last New Year's celebration, the guest speaker remarked "I'd like to see just how you firemen go into action." He got his wish, the festivities were interrupted, as before,—and while he waited, the brothers went out and extinguished a chimney blaze.

* * *

Holiday Repercussions

The dopesters have it that over 165 persons were killed as the New Year was ushered in. There were 114 known deaths in traffic accidents (about 100 under the Christmas total) while fire and suicide took more than 30 lives. California took the lead with 24, New York next with 23, Illinois with 20 and Pennsylvania with 13 fatalities.

We don't know all the Christmas death toll, but, although each year seems to show fewer deaths from Christmas tree fires, the casualties are far too many.

In Greenwich, Conn., John Harpe, 36, fell asleep on a couch. Couch took fire, believed due to cigarette. In spite of work of firemen, Harpe died of suffocation.

In Toronto, Ont., children sitting up to "catch Santa" saved a family of five when fire swept their home. They discovered fire, aroused father, who sounded alarm.

In Buffalo, N. Y., Mrs. Bessie Kravitz, 73, of N. Y. City, died from burns received Christmas Day when her clothing caught fire as she lighted a gas stove.

In Poughkeepsie, N. Y., another "stove fatality" was caused when Mrs. Lilly Northrup, 61, was burned to death in her apartment when a hot stove evidently fell on her.

Day before Christmas saw first New York City Christmas tree fire. Ira Meyer, the Bronx, was shopping for Yuletide gifts, when the Christmas tree, which he had left decorated back in his apartment, went up in flames, giving the Brothers a job.

Four Zion, Ill., high school carolers were killed when their auto left the highway and burst into flames as they were en route to sing Christmas carols at a Church celebration.

Mrs. Nila Mack, C.B.S. director of children's programs, New York City, was severely burned just before Christmas when gift package wrappings which she had thrown into an open fire in her apartment, suddenly flared out igniting an upholstered chair. She tried to carry chair to window to drop it outdoors, but curtains caught fire and so did she.

All over the country the Brothers did their stuff, reconditioning and handing out Christmas toys to the kiddies. In Metropolitan New York, alone, firemen and policemen distributed over 247,000 toys to needy children.

In Brooklyn, tragic Christmas blaze took lives of four, when fire caused by explosion of an oil heater in four-story 5-family building cut off escape after a holiday eve party. Two other persons were seriously burned and six more were treated for minor burns. Manhattan Brothers made two Christmas morning rescues from burning buildings, one when 26 families were driven to street, and 2-year old child was carried to safety in another oil stove fire, and the other when a 3-story frame building in downtown New York went up, severely burning Thomas Duffy, 37.

In New York City, a Christmas Eve fire, which, police said was set by a man who felt good will toward everybody but his boss, led to arrest on arson charge of John Markehon, 22. Markehon who claimed hours too long, pay too short, is said to have siphoned gasoline from blow torch and sprayed fluid on wooden partition in basement of apartment in which he lived. He touched match to it, watched flames for awhile, then telephoned fire headquarters. He was arrested at the scene.

Camp Upton Has New Chief

The fire department of Camp Upton at Yaphank, L. I., N. Y., has been placed under civilian leadership with the appointment of A. F. Bell of Farmingdale, L. I., N. Y., as Chief of of the military post's firemen. Previously the duties of the post had been handled by Captain C. A. Ryscraft, Fire Marshal of the post.

For the past five years, Bell has served as Superintendent of the Nassau County Vocational Extension School of Firemanics, and previous to that, he served twenty-three years with the Jersey City, N. J., Fire Department, retiring as a Battalion Chief.

In addition to the Chief, there are thirteen men in the Camp Upton Fire Department, with all but the Chief being enlisted men. Further additions will be made in the future from enlisted men until the department reaches its full quota of twenty-four men.

All men who are picked are veterans of volunteer or paid departments. Daily drills are held under the supervision of the Chief and an expert in the fire fighting technique. The apparatus of the department consists of two 500-gallon pumpers, and eleven hand-drawn chemical engines. There are about 500 extinguishers situated strategically throughout the camp and these are inspected regularly once a month as well as being subjected to spot inspections at any time.

Connecticut Plans for Emergencies

A relief plan for defense preparedness, and for coping with possible disasters, has been submitted to all local health officers in Connecticut by the State Department of Health.

Eight types of disasters, in which health officers would be called upon, were listed. They are: Floods and tidal waves, fires, winds and tornadoes, explosions, droughts and water supply failures, disease, earthquakes and military operations.

The plan recommended a general Disaster Committee to include Governor Robert A. Hurley, commissioners of health, highways, finance, dairy and food, welfare, fire and police, state forester, Chairman of the Public Utilities Commission, Adjutant General, and Red Cross representative.

Also outlined in the plan were methods to protect water supplies, sewage disposal systems, food outlets, ice plants and growing crops.

THOMAS F. MAGNER.

Baltimore Has 14-Alarm Fire

A fourteen-alarm fire, and a two-alarm fire, kept Baltimore, Md., firemen on the jump the night of February 16. The fourteen-alarm blaze razed four buildings of the Maryland Sanitary Manufacturing Co., with a loss reported to be around $200,000.

The blaze spread with almost explosive force and quickly involved the plant. All hose lines used at the fire had to be dragged by hand for a city block or more. The scarcity of hydrants in the plant area restricted the number of lines available, and many of the pumpers were unable to work, or even lead off their hose. A strong breeze blew the embers of the fire into a nearby field, directly away from the rest of the plant.

The first alarm was pulled at 7:27 pm, and the fourteenth alarm was sounded at 8:55 pm. This may be the last large fire on the city outskirts for which so many alarms are sounded.

Under new orders, the commanding officer can stop at any alarm and then start pulling special calls for the exact type of apparatus that he desires at the fire. If he wants pumpers only, he will send in a "2-10" signal, for the exact number of pumpers he wants.

When the sixth alarm had sounded for the Maryland Sanitary fire, the off-shift was recalled to duty. In a short time 370 firemen responded to their stations and placed the Second Line apparatus in service. Twenty-four of these reserve engines and trucks were manned and located in various stations. Several of the reserves responded to a second-alarm dwelling fire while the fourteen-alarm fire was still burning. All men who responded to the call to duty were rewarded with an extra day off.

OTIS SMITH

Major Disaster Program Started

The Puget Sound Firemen's Association is formulating plans for a major disaster program, which will be completed soon.

A committe is working out a large map of the territory involved, showing the location of each city, the distance between cities and the amount of equipment carried by each city.

The Puget Sound Firemens Association is one of the largest in the state of Washington, claiming a membership of nineteen departments, all volunteer except Seattle and Tacoma. Meetings are held in the various cities within the group on the second Tuesday of every other month. Once a year it holds an all-day meet with competition between departments, demonstrations and a "best fireman" contest. These events are followed by a Dutch lunch.

The following cities are included: Seattle, Tacoma, Renton, Auburn, Kent, Pacific City, Sumner, Puyallup, Orting, Eatonville, Enumclaw, Buckley, Snoqualmie, Issaquah, Bothell, Kirkland, Bryn Mawr, Duwamish and Lake Burien.

Finances have always been a problem as the only revenue has been from the dues of each department. Last year a dance was held at the Spanish Castle on the Pacific Highway between Seattle and Tacoma. This proved such a success, both financially and socially, that it was decided to make this an annual affair. This year it will be held at the same place on April 18.

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EXPERIENCES OF NEW YORK CITY WITH AUXILIARY VOLUNTEERS

During the World War Emergency of 1914-1918, 4,000 Members Made Possible Shifting of Regular Firemen to Congested Value Sections

By Wm. Jerome Daly

WHILE 26,000 courageous men and women of London's Auxiliary Fire Service are making fire-fighting history in the beleaguered capital of England, many cities in the United States are giving serious thought to the formation of an auxiliary fire brigade to augment the regular fire force. Some of the coastal and border communities are actually working on the details of such an organization even though the United States is technically in the neutral column.

War Data Censored

In New York, a wealth of information about the splendid stewardship of the London Auxiliary Fire Service was flown to these shores on January 14 by three fire-fighting members of the New York Fire Department. However, it is still a state secret until the Mayor of New York City releases it. The knowledge gained by the New York City fire fighting scouts in London will not be publicly revealed for the present, according to an authoritative source. The information, when and if available, has been pledged to the International Association of Fire Chiefs for the enlightenment and the guidance of fire fighting America in the creation of similar services.

During World War No. 1, the City of New York had a fire auxiliary corps of approximately 4,000 men which functioned most helpfully and efficiently but which did not have to encounter or endure the war risks and the tasks which the fire fighters of England have so valiantly mastered under hazards and with fatalities hitherto unknown. In 1918, when compulsory military service drew about 500 firemen from the ranks of the New York Fire Department, the Municipal Civil Service Commission advanced the entrance age for fireman from twenty-one to twenty-eight, to thirty-one to thirty-five years inclusive, but even then there was a dearth of man power to fill the depleted ranks of the department, which at that time had approximately 5,000 officers and men on a continuous duty system.

Kenlon Formed Volunteer Corps

The late John Kenlon, Chief of Department, obtained the approval of the late Mayor John F. Hylan for a plan to create a volunteer fire auxiliary corps composed of able-bodied citizens of good character and patriotic interest. Eli Joseph, a civic-minded industrialist, was appointed a Special Deputy Fire Commissioner, without salary, to undertake the details of the formation of such an auxiliary organization.

Through newspaper notice and personal solicitation, men ranging in age from twenty to fifty inclusive, were attracted to the opportunity to serve their city, with the expressed understanding in writing that they would not be compensated and that their service would in no way give them any right to membership in the Fire Department.

Opportunity for Fire Fans

It was a golden opportunity for a small army of New Yorkers, both native and adopted, to get out of their systems that yeomanry which had been in their blood since boyhood. Application forms were issued through the commanding officers of fire companies. Each applicant was required to state in writing his name, address, age, weight, height, occupation, experience, the hours of the days or the nights, or both, that he could devote as an auxiliary fireman, as well as the experience, if any, he might have had, such as volunteer fireman, engineer, steamfitter, plumber, chauffeur, mechanic, etc. There was no physical examination required.

The response to the appeal was so generous that in some of the outlying districts of the city, where it was demonstrated that auxiliary firemen were altruistically on the job day and night, some of the regular blueshirts of those fire companies were transferred to congested high value districts to fill the voids created by absence of draftees.

Men Given Equipment

Chief Kenlon appointed chief officers from the auxiliary force to the command of each borough-wide auxiliary unit. Captains were appointed in charge of battalion districts while Lieutenants and Sergeants were placed in charge of the members of the corps in the fire stations.

Badges of authority, together with boots and rubber coats were issued to the officers and members of the corps from the headquarters of the corps which was in an unused fire station in West 68th Street, near Broadway. Fire helmets were not issued, and at that time the trench hat was known only "over there" in the A.E.F. The auxiliary firemen wore borrowed helmets. In short, the auxiliary corps was organized along the lines similar to the regular city fire department as to personnel and performance.

The regular fire company officer was the superior of the auxiliary members on duty. The auxiliary firemen were each given a printed booklet of rules and regulations which were patterned in brief after the standard rules and regulations of the city fire department. The volunteers were not required to sign waivers of liability to release the City of New York from claims. However, a bill in

the State Legislature to make the city liable died in committee.

Believe it or not, some of the auxiliary corps members were none too welcome in some of the stations in the outlying parts of the city, lest their success in recruiting result in massed transfer of the regulars to the industrial, warehouse and general commercial districts of downtown Manhattan or Brooklyn. Like many things in this world that are voluntary, some of the auxiliary lads took their enlistment as a lark for the excitement of it all, but by and large, the greater proportion of the 4,000 members were wholly in earnest.

Served Well During Week

They loved their job, and many of them took risks which the rules forbade them to take. Indeed, many were officially commended for their efficient services at various heavy fires. For their exceptional assistance in a Brooklyn subway wreck in November, 1918, a score of the auxiliary fellows was cited for valor by Fire Commissioner Thomas J. Drennan.

Records were made and kept in each fire station journal of the attendance of the auxiliary corps members, and daily reports of both attendance and performance were forwarded by the regular fire company officer to auxiliary headquarters.

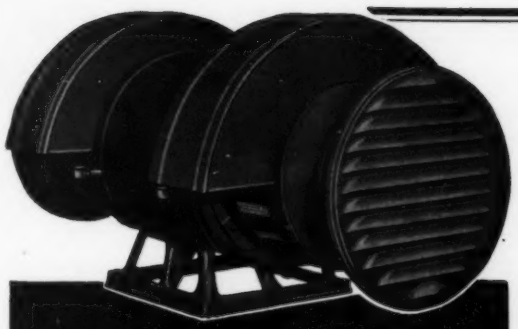
If an auxiliary fireman became negligent or disinterested and failed to attend his fire station as pledged in his enlistment application, he was diplomatically "spoken to" and asked to make a decision, one way or another. Busy fire companies were the object of affection of many auxiliary fire fighters, even though they did not reside in or approximately near the location of that fire station. The auxiliary lads were allowed to choose their units for service and some of them made peculiar choices, depending on the personality of the commanding officer, or sometimes the general personality of the members of the fire company, or then again it might be the busy activity of the unit which attracted them.

Ex-Chief G. J. Kuss in Charge

The de facto Chief of the auxiliary corps was Division Chief George J. Kuss, F. D. N. Y., now retired and engaged in the fire appliance business. His suave and genial personality straightened many kinks and ironed out many rough spots, for the auxiliary corps was a temperamental family. Chief Kuss spent his days at Fire Headquarters in the Municipal Building and his nights at auxiliary headquarters in West 68th Street. From there an auxiliary corps squad wagon carrying 1,000 feet of 2½-inch hose and miscellaneous appliances, and a dozen or so auxiliary firemen, responded to all second alarms in Manhattan and to all third alarms in the Bronx. In Brooklyn and Queens, where there were still many remnants of the old volunteer fire brigades who had managed to retain their original charters, the auxiliary corps of 1918 was even more successful. Those stalwart braves known as the "Exempts" came back in full force and with rejuvenated vigor and took over several fire companies, excepting for the paid chauffeurs.

The fire department even restored the

(*Continued on page* 146)



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MARYLAND FIRE CHIEFS CLUB VISITS HARBOR FIRE STATIONS

Annual Conference Held at Baltimore, Md., with Emphasis Placed on War Problems and Conditions

By Otis Smith

THE Fire Chiefs Club of Maryland held its annual conference at Baltimore, February 22. The members made an inspection tour aboard the fireboat Torrent during the early part of the day. The boat visited the harbor stations of the Baltimore Fire Department, and the Chiefs were conducted through the boats at the various stations.

During the remainder of the afternoon inspection trips were made through the Fire Alarm Bureau, No. 1 Truck quarters, and the pumping station of the department high-pressure system.

Fires in War Times

President B. H. Shipley opened the business session at the Southern Hotel. Edward Warr, Chief of Baltimore Salvage Corps, spoke on conditions the firemen will have to face. He mentioned an instance in Britian, where the Post Office discovered that various catalogues and magazines were being treated to start fires. Certain pages were so treated as to ignite spontaneously. Many homes were fired by these devices before the method was detected.

President McNulty, Maryland State Firemen's Association, told of the plans that his association has ready to place in operation when the proper time arrives. He also spoke of the charts being distributed to volunteer fire departments. These charts list the apparatus and equipment within a fifteen-mile radius of any fire station.

Volunteer firemen in key positions will be deferred under the Selective Service Act. Mr. McNulty arranged the details, and the Selective Service headquarters sent a circular letter to Draft Boards in Maryland, in which volunteer firemen in key positions are to be left out of the draft.

Chiefs for Army Posts

Considerable discussion resulted over the reading of a letter, in which the Quartermaster Corps stated that they were accepting only chiefs of paid fire departments to positions in command of army fire departments. Volunteer chiefs would be allowed to participate in the examinations only if enough professional fire chiefs were not available. In defense of its policy, the Quartermaster Corps stated that in view of the value and vital importance of the lives and property to be protected in the camps and forts, it felt that only the best men available should be placed in command.

President McNulty promised to take the matter up again and see if a solution acceptable to the volunteer chiefs could be obtained.

Rep. John S. White, Prince George County, Maryland, spoke on the legal status of Maryland firemen. He discussed the efforts to get state-wide laws for firemen, instead of the different laws now in force for the various counties. Lieut. Comm. Howard Hughes next spoke on Naval Station fire departments and incendiary fires.

The meeting was followed by a dinner in the Southern Hotel. Among those present as speakers were Chief Howard Travers, Secretary P. W. Wilkinson, and Commissioners Bell and McLean, all of the Baltimore Fire Department.

Auxiliary Volunteers

(*Continued from page* 145)

town or the village call system to summon from home those who preferred to sleep at their residences. Chiefs of former volunteer units took their white helmets out of the attic and dusted them off. The old uniforms were sent to the tailor. Then came the inevitable parades and the colorful pageantry and stunts that went with the public sale of Liberty bonds.

If the "blitz" comes our way, God forbid, the new legion of auxiliary firemen will have a much graver and vastly different job on hand than the type of service performed twenty-three years ago by the buffs and other good citizens of New York. Much indeed is unofficially known now about the organization, the operations and the accomplishments of the London Auxiliary Fire Service in the current crisis. This information, if needs be, could be disseminated now for the preliminary formulation of auxiliary fire services in American cities, but out of deference to the valorous reconnaissance of the three New York fire fighters who spent two months under fire in bomb-shelled London, their official version is patiently and respectfully awaited by fire-fighting America.

Talk Given on Bombs

At a combined meeting of the Onondaga County Firemen's Association and plant officials of the Solvay Plant of Allied Chemical and Dye Corporation and the Crucible Steel Company, an address was presented on Sabotage and Incendiary Bomb Hazards, this being tied up with a concluding talk on Fire Fighting Tactics and Strategy. About 400 were present at the meeting.

J. J. DEASY

Francis B. Hague Dead

Francis Baker Hague, Sales Manager of the American District Telegraph Company, New York City, died in the Memorial Hospital following a long illness. He was forty-nine years old and lived in Glen Ridge, N. J.

What British Fire Watchers Need

Cheerful Britons who spend many sleepless nights watching for enemy air raiders so as to snuff out fire bombs as they fall, chuckled at a published list of equipment recommended for fire watchers. It read:

1. Respirator.
2. One belt with ten hooks, six to carry six filled sandbags, four to carry four buckets of water.
3. One axe stuck in belt.
4. One stirrup pump to be carried over left shoulder.
5. Extension ladder to be carried over right shoulder.
6. One long-handled shovel to be carried on the left arm.
7. Two wet blankets flung around the neck.
8. One tin hat with turned-up brim to carry spare water.
9. Spare sand to be carried in all pockets.
10. Ship's anchor to be dropped in case watcher cannot stop after galloping.
11. Box of matches to light incendiary bombs failing to ignite.
12. One can of petrol to keep fire going for further enthusiastic fire watchers.

—New York *Herald Tribune*, Feb. 27, 1941.

Control of Gasoline

A new State Fire Works Law is being put through the Ohio Legislature, in addition to some changes in the laws for handling and storage of gasoline and oils. The Ohio Fire Chiefs' Association states that wonderful cooperation is being received from all of the oil companies in Ohio as well as from the Fire Fighters' Association of Ohio.

Fire Apparatus Collide

Six Waterbury, Conn., firemen and a pedestrian were injured on February 15 in a collision between an eighty-five-foot aerial truck and a twenty-six-year old pumper. The apparatus crashed at the corner of Washington Avenue and Baldwin Street while enroute to a chimney fire in the South End section of the city.

The pedestrian, received a fractured leg and possible internal injuries. He was waiting for a bus at the corner, and was struck by Engine 3 as it was hurled across the street by the impact of the collision with the heavier ladder truck. He was rushed to a hospital.

Both pieces of equipment were damaged. The ladder truck was recently purchased by the Fire Commissioners.

THOMAS F. MAGNER.

Correction

On page 621 (Questions and Answers) of the December, 1940, issue an erroneous reference was made to the outside diameter of male threads of 2½-inch National American Standard threads as being 3 3/16-inches. The outside diameter of male threads is 3 1/16 inches, this being the standard 2½-inch fire hose thread as used on the Alaska Railroad.

W. L. KINSELL,
Anchorage, Alaska.

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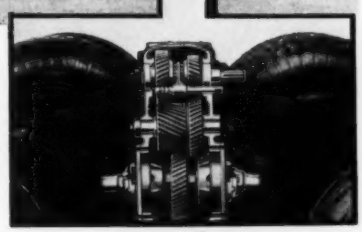

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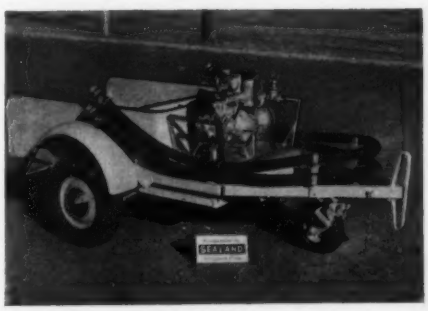

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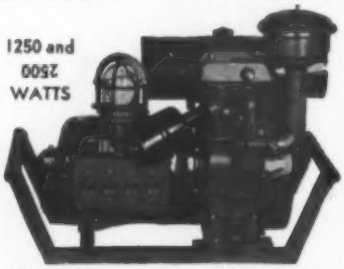

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Fire Bell vs Fire Siren

Having been directly connected with schools for the past twelve years, and during that time having observed the many detailed workings of a fire drill, I would like to offer a suggestion to improve school fire drill.

Our purpose in having a fire drill is to teach pupils to think in an emergency. However, when that emergency arises, pupils should know and know instantly, that it is an emergency. Under our present system of having a fire drill we ring a bell. Every school then has two sets of bells, the regular program bells and the fire bell. The reaction from pupils to a fire bell is not what it should be. They hesitate before reacting to this particular type of fire signal for one big reason. In their own minds they must identify the bell as a fire bell, program bell, recess bell, or one session bell. Even though the fire bell has a distinct tone of its own, the process of identifying still goes on because when that bell is heard through closed doors some of its tone is lost.

Now, supposing we substituted for our fire bell, a fire siren. There would be no hesitation, no doubts arising in the minds of teachers or pupils. It would mean only one thing and that a fire alarm. I have talked about this particular problem with many teachers representing many different schools. We are in hearty agreement and are incorporating recommendations for the revision of the curriculum in safety education that the school fire bells be replaced with fire sirens.

As to the cost, after checking prices of fire bells and fire sirens, I am of the opinion that schools would not increase their initial cost of a fire alarm system or maintenance bills one cent.

Day after day in these troubled times, we hear of new plans for national defense. More and more, the siren in becoming the accepted signal of emergency. It is our job then to use any possible means at our disposal to teach children the meaning of the word, emergency. In the school, fire sirens would be of much greater help than the present fire bell.

In addition to eliminating the possibility of confusion of signals, or the hesitancy and possible failure to observe a fire drill, the fire siren becomes to the children the signal for an emergency in or out of school, and as such a signal, pupils must be taught to react to it in the proper way.

T. S. Davis.

Training for Firemen

Ohio's first Institute for the Promotion of Vocational Training for Firemen is scheduled to be held in the University at Kent, Ohio, April 8-9. It is to be conducted by Kent State University and the State Board for Vocational Education in cooperation with the Ohio Committee for the Promotion of Vocational Training for Firemen.

The idea of the Institute is appealing in that it is intended to bring about increased interest in organized training for firemen, somewhat above the plans of the ordinary fire schools. The teaching of classes in the art of firemanship will be handled by field instructors, three of whom are at present operating in Ohio.

C. A. Delaney

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TO FIRES

PORTABLE CUTTING EQUIPMENT
Light . . . easy to carry . . . cuts steel *fast*.

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Positive . . . adjusts smoothly at high pressure—non-creep . . . non-corrosive.

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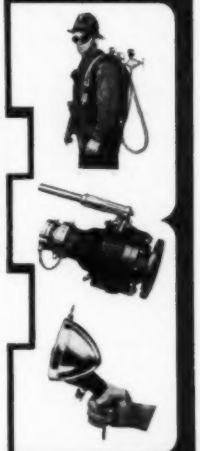
Guaranteed bright at ¼ mile . . . light . . . one-hand operated . . . long-life battery.



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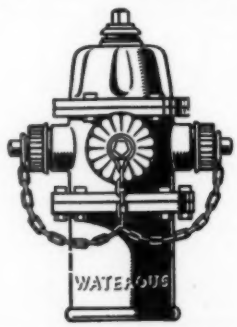
FIRE HYDRANTS



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Waterous Hydrants have given an excellent account of themselves through fifty-five Northwest winters. They are dependable because they are built that way. Send for catalog.

Waterous Dependable

WATEROUS COMPANY
SAINT PAUL

Train Depot Wing Razed

One of the most spectacular downtown fires in Providence, R. I. history, destroyed an entire wing of the New York, New Haven, and Hartford Railroad Depot on February 18. Paper freight records piled waist high on the second and third floors were the cause of the rapid spread of the fire. A general alarm was turned in bringing all downtown apparatus to the scene with Chief Thomas Cotter in charge.

The main passenger depot was protected by a water curtain, but the heat from the fire was so intense that passenger service had to be discontinued for about an hour. Several firemen narrowly escaped death when a wall buckled and crashed outward. Two fire trucks were set afire by the heat, one of them being pushed to safety. About two hours after the start of the fire, officials declared that it was under control. The damage was said to exceed $100,000.

Bridgeport Chaplain Dead

Rev. James H. Killian, Chaplain of the Bridgeport, Conn., Fire Department for the past eleven years and pastor of St. Mary's R. C. Church in that city, died at St. Mary's Hospital, West Palm Beach, Florida, on February 24, following an operation for appendicitis which developed into peritonitis. Father Killian was forty-six years old and was devoted to the members of the Bridgeport Fire Department since his appointment as department Chaplain in 1929.

Besides a brother who resides on Long Island, Father Killian is survived by three cousins, Michael A. Connor, Commissioner of Motor Vehicles of Connecticut; Garrett Farrell, ex-Chief of Police of Hartford, and Mrs. Samuel Preston of Hartford. A delegation of the off-platoon of the Fire Department attended the funeral services held from St. Mary's Church on February 28. Interment was at St. Michael's Cemetery, Bridgeport. THOMAS F. MAGNER.

Fire College to Aid Defense

The Edgewater Fire College and Drill School, Edgewater, N. J., run in connection with the Bergen County, N. J., Defense Corps, started early in February and will continue for three months. It is open to all Bergen County firemen and other persons interested in cooperating with the National Defense Program.

So far more than 300 have registered from about twenty-five municipalities. The college program has been arranged to give the most complete knowledge of fire fighting, and experts on different phases will be guest speakers in addition to the regular set up of class work.

This Fire College, headed by George P. Lasher, Chief Engineer, Edgewater Fire Department, is Edgewater's contribution to the defense program. All expenses for this college are being paid for by the Borough of Edgewater.

Legal Data Relative to Firemen

The Oklahoma State Firemen's Association has announced that a collection of Supreme Court decisions, opinions of the Attorney General, and state laws affecting firemen, have been completed and published in book form for distribution to the fire departments of the state.

A Modern Resuscitator for MODERN FIRE DEPARTMENTS

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More and more modern fire departments are buying the Emerson Resuscitator, Inhalator and Aspirator.

They are doing this because it is, in the opinion of users, the most compact, foolproof, reliable and effective resuscitator available.

They like its superior design and construction.

They like its almost human automatic self-adjusting action in treating infants and adults.

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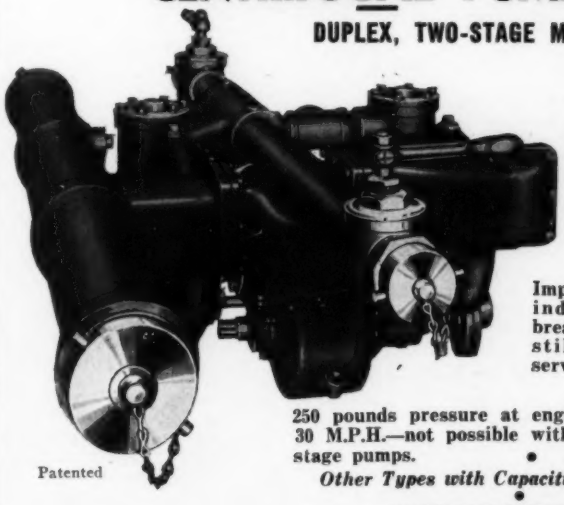

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250 pounds pressure at engine speed equal to 30 M.P.H.—not possible with conventional two-stage pumps.

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38 years service in the fire field

Prompt service - Quality products

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BRASS MFG. CO.
ELKHART, INDIANA

Convention Dates

April 8—STATE ASSOCIATION OF FIRE CHIEFS OF MAINE. Quarterly meeting, Westbrook. Secretary, Charles W. Bowker, S. Paris, Me.

*April 16-19—ARIZONA STATE FIREMEN'S ASSOCIATION. Annual Convention, Tucson, Ariz. Secretary, H. W. Reggin, Box 813, Prescott, Ariz.

*May (tentative)—NEVADA STATE FIREMEN'S ASSOCIATION. Annual Convention, Lovelock, Nev. Secretary, E. R. Simms, Sparks, Nev.

May 12-13—MISSOURI VALLEY ASSOCIATION OF FIRE CHIEFS. Annual Meeting, Grand Island, Nebr. Secretary, Ray Tiller, Waterloo, Ia.

May (tentative)—NORTHWEST FIRE SCHOOL. To be held at the University of Minnesota, Minneapolis, Minn. Committee Chairman, W. L. Bundy, Alexandria, Minn.

May 5-6—KANSAS STATE FIREMEN'S ASSOCIATION. Annual Meeting, McPherson, Kans. Secretary, K. D. Doyle, Wawego, Kans.

May 7-9—GEORGIA STATE FIRE COLLEGE. Annual Meeting, Atlanta, Ga. Director of College, Harry Phillips, 116 Ala. Street, Atlanta, Ga.

May 14-16—NORTH CAROLINA FIRE COLLEGE AND DRILL SCHOOL. Annual Meeting, Charlotte, N. C. Secretary, J. C. Fitzgerald, Asheville, N. C.

May 19-21—NEW YORK STATE FIRE CHIEFS' ASSOCIATION. Annual Meeting, Utica, N. Y. Secretary, Chris W. Noll, Poughkeepsie, N. Y.

*May 20-23—IOWA FIRE SCHOOL. 17th Annual Fire School, Iowa State College, Ames, Ia. Director, L. J. Murphy, Ames, Ia.

*May 21—IOWA FIRE CHIEFS' ASSOCIATION. Annual Convention, Ames, Ia. Secretary, L. R. Morris, Ames, Ia.

*May 26-28—NEW MEXICO STATE FIREMEN'S ASSOCIATION and NEW MEXICO STATE FIRE SCHOOL. 19th Annual Convention and 12th Annual Fire School, Hot Springs, N. M. Secretary, T. A. Rosenwald, Albuquerque, N. M.

*June (tentative)—FLORIDA STATE FIREMEN'S ASSOCIATION. Annual Convention, Jacksonville, Fla. Secretary, F. C. Pfaender, Chattahoochee, Fla.

June—SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION. Annual Meeting, Conway, S. C. Secretary, Paul E. Wilburn, Union, S. C.

*June 2-4—OKLAHOMA STATE FIREMEN'S ASSOCIATION. Annual Convention, Ponca City, Okla. Secretary, Charles Slemp, 1701 Northeast 63rd Street, Oklahoma City, Okla.

JUNE 2-6—SOUTH DAKOTA FIREMEN'S ASSOCIATION AND FIRE SCHOOL. Annual Meeting, Sioux Falls, S. D. Secretary, M. C. Sullivan, Parkston, S. D.

*June 4-5—NORTH DAKOTA FIREMEN'S ASSOCIATION. Annual Convention, Williston, N. D. Secretary, H. R. Handtmann, Fargo, N. D.

June 9-11—MINNESOTA STATE FIRE DEPARTMENT ASSOCIATION. Annual Meeting, Alexandria, Minn. Secretary, Fred Pfaender, New Ulm, Minn.

June 10-13—ILLINOIS FIRE COLLEGE. 17th Annual Fire College, Illinois Firemen's Association, University of Illinois, Champaign-Urbana, Ill. Secretary, R. W. Alsip, Champaign, Ill.

*June 12-13—INDIANA INDUSTRIAL AND VOLUNTEER FIREMEN'S ASSOCIATION. Annual Convention, Bremen, Ind. Secretary, W. H. Collisson, Winona Lake, Ind.

June 12-14—EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Meeting, Lancaster, Pa. Secretary, Charles E. Clark, Box 217, Wayne, Pa.

June 18—THE NORTHWESTERN OHIO VOLUNTEER FIREMEN'S ASSOCIATION. Annual Meeting, Crestline, Ohio. Secretary, J. W. Gardner, Ashland, Ohio.

June 19-21—HUDSON VALLEY VOLUNTEER FIREMEN'S ASSOCIATION. Annual Meeting Poughkeepsie, N. Y. Secretary, Chris W. Noll, Poughkeepsie, N. Y.

*June 21—LEBANON COUNTY FIREMEN'S ASSOCIATION. 19th Annual Convention, Annville, Pa. Secretary, Chief Fire Marshal, A. S. Sauffer, Palmyra, Pa.

*June 24-26—OHIO FIRE CHIEFS' ASSOCIATION. Annual Convention, Lancaster, Ohio. Secretary, E. J. Green, Steubenville, Ohio.

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June 25—CENTRAL WESTERN (OHIO) FIREMEN'S ASSOCIATION. 11th Annual Convention, Ft. Loramie, Ohio. Secretary, Roger C. O'Donnell, Covington, Ohio.

July—TEXAS FIREMEN'S TRAINING SCHOOL. Annual Meeting, A. and M. College of Texas, College Station, Tex. Director of Firemen's Training, H. R. Brayton, A. and M. College of Texas, College Station, Tex.

July 8—STATE ASSOCIATION OF FIRE CHIEFS OF MAINE. Quarterly meeting, Rockland. Secretary, Charles W. Bowker, S. Paris, Me.

*July 16-17—ONONDAGA COUNTY VOLUNTEER FIREMEN. Annual Convention, Minoa, N. Y. Assistant Secretary, J. C. Shedd, Minoa, N. Y.

July 16-18—MARITIME FIRE CHIEFS ASSOCIATION. Annual Convention, Edmundston, N. B. Secretary, Charles A. Cunningham, St. John, N. B.

*July 21-25—WEST VIRGINIA FIRE SERVICE EXTENSION SCHOOL. 11th Annual State Fire School, West Virginia University, Morgantown, W. Va. Director, G. R. Spindler, 121 Mechanical Hall, Morgantown, W. Va.

July 21-23—WISCONSIN STATE FIRE CHIEFS' ASSOCIATION. Annual Convention, Wausau, Wis. Secretary, A. V. Simon, Ladysmith, Wis.

Aug. (tentative)—DOMINION ASSOCIATION OF FIRE CHIEFS. Annual Convention, Peterborough, Ont. Secretary, Chief James Armstrong, Box 56, Kinston, Ont.

*August—UTAH STATE FIREMEN'S ASSOCIATION. Annual Convention, Murray, Utah. Secretary, J. J. Creedon, Bingham Canyon, Utah.

Aug. 4-5—NEW YORK STATE FIRE FIGHTERS' ASSOCIATION. Annual Convention, Syracuse, N. Y. Secretary, Frank A. Emden, 1403 Mather Ave., Utica, N. Y.

*Aug. 4-6, 1941—INDIANA FIREMEN'S ASSOCIATION. 25th Annual Convention, Kokomo, Ind. Secretary, Burley Marshall, P. O. Box 725, Terre Haute, Ind.

Aug. 12-15—VIRGINIA STATE FIREMEN'S ASSOCIATION. Annual Convention, Staunton, Va. Secretary, R. B. Barker, Newport News, Va.

Aug. 16-17—VERMONT STATE FIREMEN'S ASSOCIATION. Annual Meeting, place not fixed. Secretary, W. H. Adams, Vergennes, Vt.

Aug. 17-20—NEW YORK STATE PERMANENT FIREMEN'S ASSOCIATION. Annual Convention, Auburn, N. Y. Secretary, Arthur Bleau, Wesleyan Street, Amsterdam, N. Y.

Aug. 19-22—FIREMEN'S ASSOCIATION STATE OF NEW YORK. Annual Convention, Geneva, N. Y. Secretary, Fred A. Davis, Fort Edward, N. Y.

*Aug. 19-22—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. 69th Annual Convention, Hotel Statler, Boston, Mass. Secretary, D. B. Tierney, Arlington, Mass.

Sept.—NEW HAMPSHIRE STATE FIREMEN'S ASSOCIATION. Annual Meeting, place not fixed. Secretary, A. G. Robinson, Manchester, N. H.

*Sept., 1941—IOWA FIREMEN'S ASSOCIATION. Annual Meeting, Chariton, Ia. Secretary-Treasurer, Paul A. Saener, Independence, Ia.

Sept. 2-5—MARYLAND FIRE COLLEGE. 12th Annual Fire College, University of Maryland, College Park, Md. Director, J. W. Just, University of Maryland, College Park, Md.

Sept. 9—STATE ASSOCIATION OF FIRE CHIEFS OF MAINE. Annual Meeting, Norway. Secretary, Charles W. Bowker, S. Paris, Me.

*Sept. 10-11—DELAWARE VOLUNTEER FIREMEN'S ASSOCIATION. Annual Convention, Middletown, Del. Secretary, W. W. Pettyjohn, Dover, Del.

Sept. 12-13—NEW JERSEY STATE FIREMEN'S ASSOCIATION. Annual Meeting, Atlantic City, N. J. Secretary, Evan F. Benners, R. 602, 24 Branford Place, Newark, N. J.

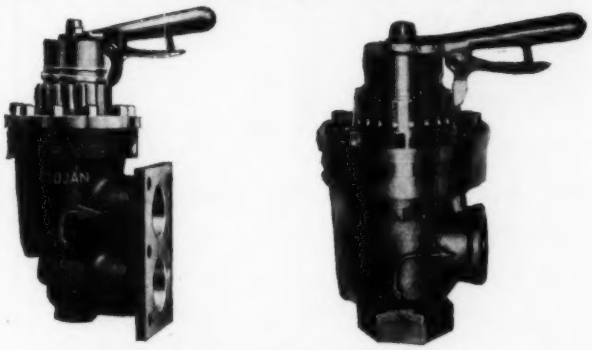
*Sept. 22-25—CALIFORNIA STATE FIREMEN'S ASSOCIATION. 19th Annual Convention, Huntington Hotel, Pasadena, Cal. Secretary, H. E. Strasser, 2046 Oregon Ave., Long Beach, Cal.

*Sept. 29-Oct. 2—INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. 46th Annual Meeting, Hotel Jefferson, St. Louis, Mo. Secretary, Irving Shulsinger, New York City.

*Oct., 1941—ARKANSAS STATE FIREMEN'S ASSOCIATION. Annual Meeting, Magnolia, Ark. Secretary-Treasurer, H. D. Compton, Central Fire Station, Little Rock, Ark.

*Oct. 2, 1941—WALWORTH COUNTY FIRE OFFICER'S ASSOCIATION. 11th Annual Meeting, Secretary-Treasurer, C. A. Foster, Lake Geneva, Wis.

ROSS RELIEF VALVE
on TRAILOR PUMPS



Sizes: 1 inch to 1½ inches
Pressure Adjustments: 10 to 250 lbs.
50 to 750 lbs.

Capacity: 0 to 250 G.P.M.
at 120 lbs. 0 to 500 G.P.M.

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QUAKER FIRE HOSE
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Flexible—easy to handle in any action. Coils readily and is fully guaranteed.

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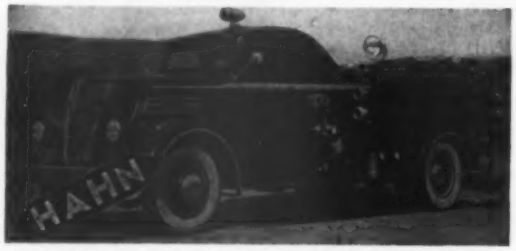

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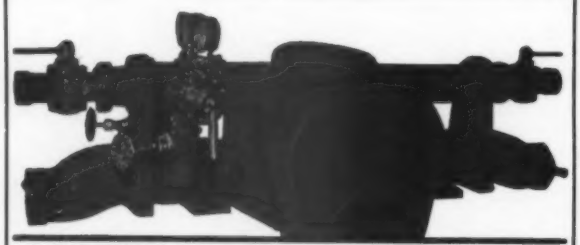

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your hose expanding equipment with
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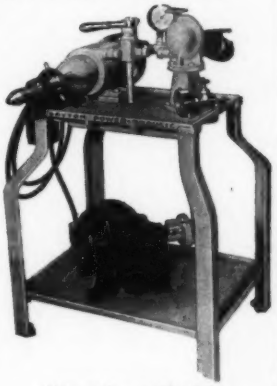
Expands couplings from ¾" to 6" size

Tests hose up to 700 lbs.

Removes old expansion rings from old couplings. No manual effort needed.



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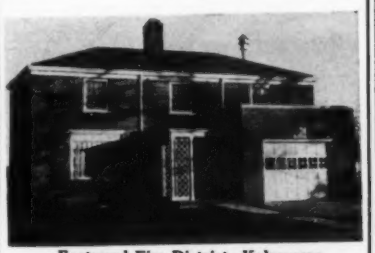

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Chief Fred H. McAllister of Eastwood, Kalamazoo (former president Michigan State Firemens' Assn.) is pleased with his new station and all of his equipment. He has this to say of CIRCUL-AIR: "Our 500 ft. model we have used to great advantage; it dries hose much faster and better than the tower or hose rack. I can sincerely indorse it for any fire dept." His statement confirms other reports we are getting all over America.

Are You Building a New Station?

Or remodelling the old headquarters? . . . or just not satisfied with drying hose the "hard way"? . . . then it will pay you to investigate CIRCUL-AIR NOW.

Suitable and practical for all fire departments, large or small, in cities, villages, townships and industrials; they all LIKE IT!!!

For further information, contact your Fire Hose and Supply Salesman, or write us direct.

THE CIRCUL-AIR CORP.
303 Dwight Bldg., Jackson, Mich.

OFFICER'S ASSOCIATION. 11th Annual Meeting, Secretary-Treasurer, C. A. Foster, Lake Geneva, Wis.

*Oct. 7-9, 1941—FIREMEN'S ASSOCIATION OF THE STATE OF PENNSYLVANIA. Annual Convention, Greensburg, Pa. Secretary Charles E. Clark, Box 217, Wayne, Pa.

*Oct. 14-16, 1941—ILLINOIS FIREMEN'S ASSOCIATION, Inc. Annual Convention, Bloomington, Ill. Secretary, Roy W. Alsip, Champaign, Ill.

*Oct. 21-23, 1941—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. Annual Convention, Norfolk, Neb. Secretary-Treasurer, Louis A. Novak, Box 788, Norfolk, Neb.

*The notices marked with an asterisk are either appearing for the first time or have been changed since the preceding issue.

Aid for Maimed British Firemen

Firemen in this country, who are this nation's first line of civil defense, are deeply interested in Britain's fire fighters, who are the first line of civil defense in England. Many of Britain's fire fighters have fallen, in line of active duty, while many others have been maimed for life or are confined to hospitals. Meanwhile the wives and children of these men have to suffer.

Realizing this, the Executive Committee of the International Association of Fire Fighters decided that a British Fire Fighters' Relief Fund would be sponsored by that association for British fire fighters, who have been maimed or injured as a result of enemy action, and their families. The objective of the program is as follows:

The International Association of Fire Fighters has created the fund, and officers of the International will supervise and direct the campaign to raise funds for this purpose. Every dollar of this fund will go directly to the relief of British fire fighters and their families.

The organization setup for the relief fund will have Fred W. Baer, President, and G. J. Richardson, Secretary, of the International, acting as national directors. The Vice-Presidents and Trustees of the International will act as regional directors.

The active Chairman of every city will be the Fire Chief of that city. In a city where a local of the International exists, a Co-Chairman will be appointed who will be the President of said local. It will be the duty of the Chairmen and Co-Chairmen to take care of the funds that they are raising in their respective cities. They will coordinate and create means by which funds can be raised, such as direct donations from members, hold dances, boxing matches, midnight shows and other events. The officers of the International will supplement the Chairmen's work by providing material, which is fitting and constructive, to help the officers and Chairmen in their work. It is urged that the press and the radio be used to the fullest extent in promoting the entertainment and other methods used in raising funds.

As a goal for the drive, it is expected that the equivalent of two dollars per fireman should be raised in every city, and that every volunteer fire company should have a goal of at least ten dollars per company.

The British War Relief Society, The British Embassy, and the Canadian Legation all have been contacted and have expressed their appreciation for such a gesture. A committee from the British Fire Fighter's organization will distribute and allocate the funds to those fire fighters needing aid in Britain.

CONSERVE WATER
on your tank - trucks

EXTINGUISH GASOLINE FIRES
by minimum disturbance

These new (original) Fognozls for booster lines and 1½" hose lines are not only equipped with interchangeable Waterfog tips, but may also be used with Applicator for extinguishing gasoline fires; these are the only Nozzles approved by Underwriters for the extinguishment of gasoline fires *with water*.

The easy-operating all-weather lever operates in direct sequence from "shut-off" to "Waterfog" to "straight stream".

Write for specifications on water deliveries.

FOG NOZZLE COMPANY
1521 East Slauson Avenue
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COVER'S NOD and SHAKE SMOKE MASK

Carry It in Pocket. Slip on in a Jiffy. Positive Protection to Eyes Against Smoke and Saves the Lungs.

WHY GET SICK?

Price $48 per Dozen

Upon receipt of $4.00 one will be forwarded as a sample postpaid.

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for defense . . . . . .

The complete line of Hale Fire Pumps, Rotary and Centrifugal, Trailer Pumpers and Pumping Units, accurately meets the modern requirements of National Defense.

Write today for the Catalog and Folders on the complete line of Hale Pumps.

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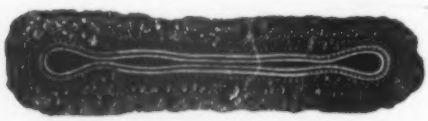
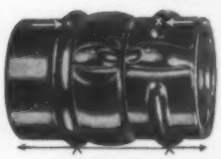


This is the new LIGHT WEIGHT BI-LATERAL FIRE HOSE



This hose will stand 900 pounds pressure and weighs but 45 pounds to the section uncoupled.

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MARCH, 1941

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